

**FINAL  
ENVIRONMENTAL ASSESSMENT**

**ERADICATION OF INVASIVE FISH SPECIES  
FROM POW WOW PARK POND  
MALMSTROM AIR FORCE BASE**

**PREPARED FOR:**

**ENVIRONMENTAL MANAGEMENT FLIGHT  
341<sup>ST</sup> CIVIL ENGINEERING SQUADRON  
MALMSTROM AIR FORCE BASE  
GREAT FALLS, MONTANA 59402**

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## EXECUTIVE SUMMARY

The United States Air Force (USAF) with assistance from the United States Fish and Wildlife Service (USFWS) proposes to eradicate illegally introduced invasive fish species [goldfish (*Carassius auratus*) and white suckers (*Catostomus commersoni*)] from Pow Wow Park Pond on Malmstrom Air Force Base (AFB), Montana. Malmstrom AFB wishes to improve the recreational fishing opportunities at Pow Wow Park Pond. But before proposed pond improvements are completed to improve dissolved oxygen and water clarity levels, efforts are needed to deal with the invasive fish problem. Eradication of the goldfish and white suckers is necessary to allow the best chance for growth and survival of trout, which are stocked in the Pond twice a year.

The Air Force is required by the National Environmental Policy Act (NEPA) to analyze the potential effects of its proposed actions. This document describes the applicable laws, affected environment, and potential direct, indirect, and cumulative effects of the Proposed Action and No Action alternatives. The document fulfills the requirements of NEPA, Air Force Regulations, and other applicable laws and regulations.

Pow Wow Park is a recreational site in the east central area of the Base. Pow Wow Park Pond is the largest water impoundment on MAFB, approximately 1.7 acres in size. Under the Preferred Alternative, invasive species would be eliminated from the Pond using the piscicide rotenone. Rotenone is toxic to fish, zooplankton, and many aquatic invertebrates, killing them by blocking oxygen uptake. It is generally nontoxic to most mammals and birds at concentrations used for fish.

During application, all recommended safety standards and equipment would be followed and utilized to minimize impacts to humans and the environment. Rotenone would be administered under the direction of certified piscicide applicators. Increased risk to health and safety, mainly to applicators, through inhalation or improper exposure would be mitigated by careful management of the fish toxicant and wearing of proper safety equipment including full face respirators (for applicators) during the application. During and after application, the area would be signed and closed off to public access for a 24-hour period.

Direct impacts of the Proposed Action include removal/eradication of all fish species and temporary eradication of crawdads, aquatic insects, and possibly amphibian larvae. Sport fish would be reintroduced/stocked into the Pond once renovation activities are completed. Insects and other species should quickly reestablish. Crawdads could be reintroduced after any treatments, if they were eliminated. Impacts to wetland areas, ground water, significant habitat areas, or threatened or endangered species or their habitat are expected to be minimal to none from the Proposed Action; therefore, no mitigation measures are required/proposed. In the long-term, the Proposed Action will have a beneficial effect on the biological integrity of Pow Wow Park Pond. No significant cumulative effects were likely as a result of any of the alternatives.

## **1.0 PURPOSE AND NEED FOR PROPOSED ACTION**

### **1.1 INTRODUCTION**

The United States Air Force (USAF) with assistance from the United States Fish and Wildlife Service (USFWS) proposes to eradicate illegally introduced invasive fish species from Pow Wow Park Pond on Malmstrom Air Force Base (AFB). Malmstrom AFB has contracted with the USFWS to obtain baseline information on the aquatic and terrestrial resources existing on the Base. The USFWS, Montana Fish and Wildlife Management Assistance Office (FWMAO), has also periodically provided technical assistance in the development, design, and implementation of potential fish and wildlife enhancement features on Malmstrom AFB during the last 20 years. The FWMAO conducted field work to obtain baseline information during the winter and summer of 2003. Aquatic surveys replicated the methodology of similar surveys conducted by OEA Research, Inc. in 1999 and the USFWS in 2001. In addition to these activities, the FWMAO evaluated the overall aquatic resources on Malmstrom AFB and recommended potential fishery enhancement projects.

Pow Wow Park Pond is the largest water body on Malmstrom AFB. Recreational facilities in the area include a gazebo picnic area, outdoor picnic tables, barbeque grills, toilets, horseshoe pits, baseball field, open areas and the pond. The pond provides recreational fishing opportunities, primarily for children of Base personnel. It is stocked twice a year by Montana Fish, Wildlife and Parks with a total of 1000 rainbow trout from Giant Springs State Trout Hatchery in Great Falls, MT.

Over the past years, Malmstrom AFB personnel have proposed numerous improvements to the Pow Wow Park Pond recreational area including site work and equipment installations to enhance fish and wildlife habitat, wildlife viewing, and fishing opportunities.

Recommendations have been solicited from the Montana FWMAO as well as various contractors. Proposed or recommended improvements include wind breaks, bank and shore stabilization, and an aeration system to improve fish habitat; and planting vegetation, shrubs, and trees, and installing an irrigation system to improve wildlife habitat. Proposed

improvements to enhance wildlife viewing include adding walking trails and handicap accessibility.

## 1.2 PURPOSE

The purpose of this action is to eradicate illegally introduced invasive fish species from Pow Wow Park Pond on Malmstrom AFB. As mentioned above, Pow Wow Park Pond is stocked twice a year with rainbow trout. Visitors to the pond are primarily interested in the opportunity to fish for trout. Malmstrom AFB wishes to continue and improve the recreational and fishing opportunities at Pow Wow Park Pond. However, before some of the above mentioned improvements are completed to improve dissolved oxygen and water clarity levels, efforts are needed to deal with the invasive fish problem.

In 2001, goldfish (*Carassius auratus*) were first observed by the USFWS in Pow Wow Park Pond. It was initially thought that the goldfish would not survive over winter or reproduce in the pond. However, in 2003, goldfish were observed actively spawning in the pond and three age classes were identified. An adult white sucker (*Catostomus commersoni*) was also captured in the pond. This was at best unsettling, as suckers are even more undesirable than goldfish in a recreational fishery. This is due not only to the size they can attain, but their direct competition with trout for food resources. It is not known if additional white suckers exist in Pow Wow Park Pond or if reproduction of white suckers has occurred. The source of the goldfish and suckers is unknown, but is probably the result of Base residents dumping the contents of aquariums and/or bait buckets into the pond. Eradication of the goldfish and white sucker is necessary in order to allow the best chance for growth and survival of more desirable fish once pond improvements are complete. In addition, Base residents need to be better informed regarding the ramifications of dumping exotic fish into Base ponds.

## 1.3 PROJECT LOCATION AND SETTING

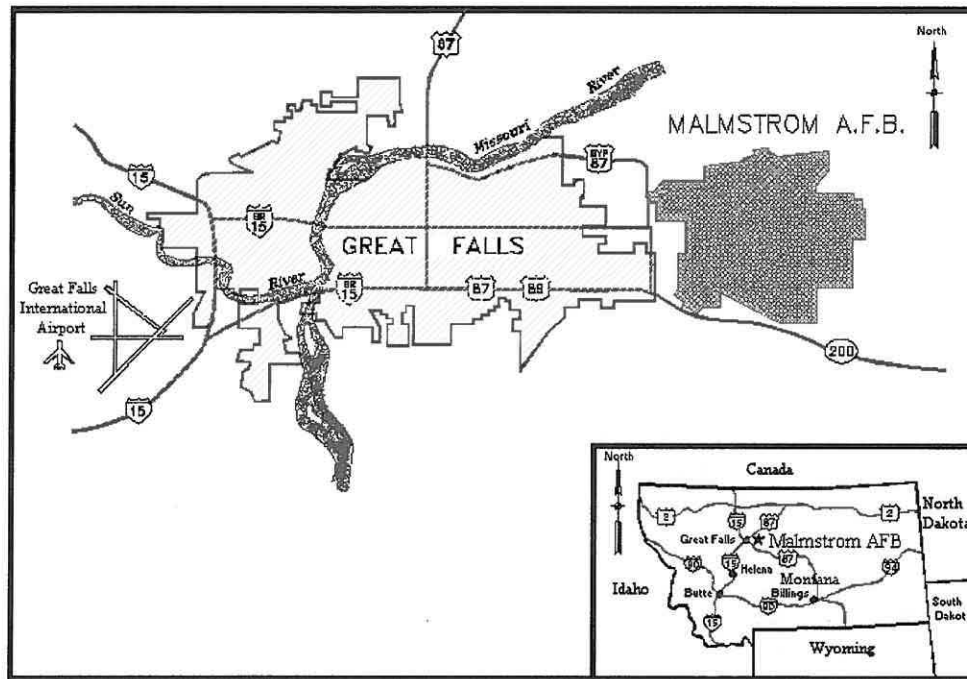
Malmstrom AFB encompasses over 3,600 acres of land in Cascade County, in north central Montana. The City of Great Falls lies approximately 0.4 miles to the west of the Base at its closest point (Figure 1). The Missouri River is located approximately 0.9 miles north of the



Base and flows easterly. Interstate Highway 15 passes through Great Falls and access to the Base is provided from Highway 87/89. Land uses on Malmstrom AFB include Airfield, Aircraft Operations and Management, Industrial, Administrative, Medical, Personnel Housing, Community Commercial, Community Service, and Outdoor Recreation (Hydrometrics 2003). Land use in the vicinity of Malmstrom AFB is predominantly rural - agriculture. Agriculture and rangelands extend for miles to the north, east, and south of the Base. The foothills of the Little Belt Mountains and Highwood Mountains lie further south and east, respectively.

Figure 1. Location of Malmstrom Air Force Base

Source: U.S. Air Force 1998, TetraTech EM Inc. 1999

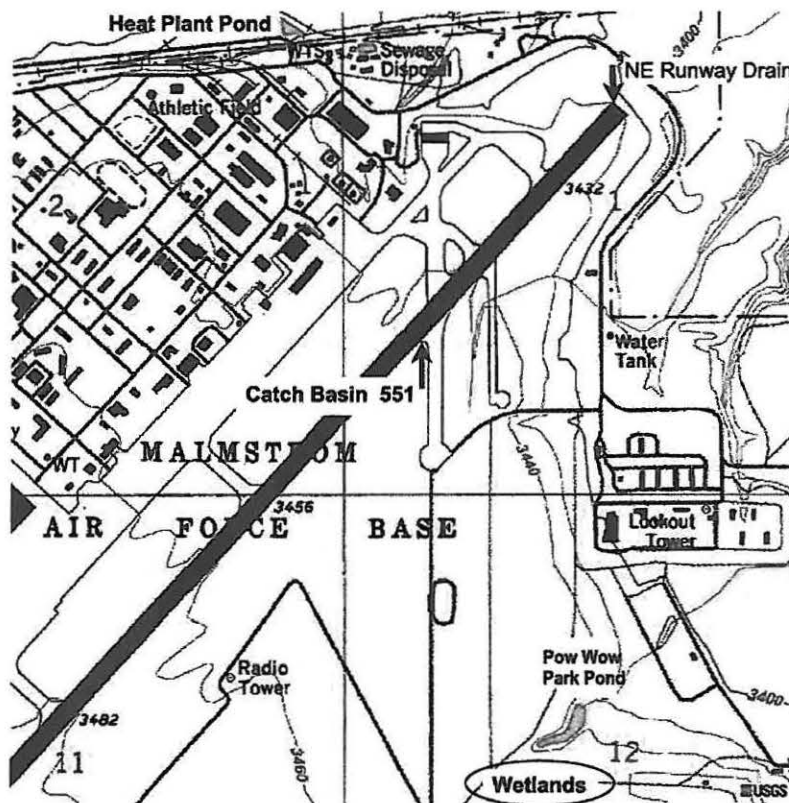


Malmstrom AFB lies in the shortgrass prairie region, at an elevation of 3500ft (1,068 m) above sea level. This is the most arid region of the mid-continental grasslands with annual precipitation averaging 15 inches. The topography and drainage of the area has been significantly altered since construction of the Base in 1942. Most native vegetation within the developed areas of the Base has been altered with the introduction of exotic vegetation. Surface water on the Base is limited to runoff from Base groundwater uses, stormwater, and

facility operation collection system. Three man-made impoundments exist on Malmstrom AFB to collect stormwater runoff, including Pow Wow Park Pond and two smaller ponds near the Central Heat Plant.

The proposed project is located at Pow Wow Park, a recreational site in the east central area of the Base (Figure 2). Originally constructed in the mid-1960's, park facilities include a gazebo picnic area, outdoor picnic tables, barbeque grills, toilets, horseshoe pits, baseball field, open areas, and the pond. Pow Wow Park Pond is the largest water impoundment on MAFB, approximately 1.7 acres in size. The pond is fed by storm water run-off from Malmstrom AFB Drainage Area 6. Pow Wow Park Pond is an elongated waterbody with a U- shape bottom contour. It is relatively shallow with a maximum depth recorded in 2003 of 5.7 meters (18.7 feet) in the northeastern section of the pond. The western section is about 3 meters (9.8 feet) deep until dropping drastically near the center of the pond. The water level in Pow Wow Park Pond is maintained by a drainage culvert located in the dike at the east end of the pond.

Figure 2. Location of Pow Wow Park Pond, Malmstrom AFB.





### 1.3.1 Vegetation

Much of the native vegetation on Malmstrom AFB has been converted to introduced grass and weed species. Upland grasses compose the primary cover around Pow Wow Park Pond and adjacent open areas. These consist primarily of crested wheatgrass, smooth brome, and Kentucky bluegrass. Some sections of the pond's shoreline are predominately wetland vegetation interspersed with upland grasses or bare, eroding soil. Willows grow along the east and west ends of the pond. The south-facing slopes on the north side of the pond (between the parking lot and the water), are subjected to heavy foot traffic and drought resulting in significant bare soil areas (Hydrometrics 2003). The soils in the area are fine, silty clay and are highly susceptible to wind and water erosion, creating the siltation problems in the pond. Appendix A contains a photograph of Pow Wow Park Pond.

### 1.3.2 Fish and Wildlife

Several surveys of fish and wildlife species have been completed on Malmstrom AFB over the years. Historically, wildlife found in the area included bison (*Bison bison*), elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*) and many small mammals. Currently however, with the development and related fragmentation of habitats, wildlife species common on the Base include white-tailed jackrabbit (*Lepus townsendi*), cottontail rabbit (*Sylvilagus nuttali*), badger (*Taxidea taxus*), striped skunk (*Mustela mephitis*), Richardson's ground squirrel (*Spermophilus richardsonii*), red fox (*Vulpes vulpes*), shrews, voles (*Microtus pennsylvanicus*), and mice (*Peromyscus maniculatus*). Coyotes (*Canis latrans*), pronghorn, and mule deer are also regularly sighted on the Base. Bird species include horned larks (*Eremophila alpestris*), western meadow larks (*Sturnella neglecta*) and a variety of other songbirds, as well as shorebirds, raptors, and waterfowl.

The USFWS conducted a terrestrial and aquatic species survey and habitat assessment on Malmstrom AFB in 2001. Seventeen (17) bird species were identified on the Base including long-billed curlew (*Numenius americanus*), California gull (*Larus californicus*), common snipe (*Capella gallinago*), cliff swallows (*Petrochelidon pyrrhonota*), brown-headed

blackbirds (*Molothrus ater*) and great blue heron (*Ardea herodias*). Horned larks (*Eremophila alpestris*) and grasshopper sparrows (*Ammodramus savannarum*) were very common.

During the same surveys in 2001, a prairie rattlesnake (*Crotalus viridis viridis*), plains garter snake (*Thamnophis radix*), and leopard frog (*Rana pipiens*) were recorded. Six western painted turtles (*Chrysemys picta*) and one northern leopard frog (*Rana pipiens*) were also observed in Pow Wow Park Pond. Additional observations of aquatic life in the pond included rainbow trout (*Oncorhynchus mykiss*), white suckers (*Catostomus commersoni*), crawdads (*Orconectes virelis*), fathead minnows (*Pimephales promelas*), and goldfish (*Carassius auratus*).

### 1.3.3 Threatened and Endangered Species

No federally listed endangered, threatened, proposed/candidate species, sensitive species, or state listed Species of Concern or potential habitat for such species are known to occur on the Base (Montana Natural Heritage Program 2004a). The one federally listed species reported to occur within Cascade County, the bald eagle (*Haliaeetus leucocephalus*) utilizes areas along large river systems and lakes. Thus, while it likely may occur along the Missouri River, it has not been reported in the vicinity of Malmstrom AFB (Montana Natural Heritage Program 2004a, HartCrowser 2004). During the various wildlife surveys, there were no observations of any threatened or endangered species on Malmstrom AFB. No federally listed threatened or endangered plant species have been identified on Malmstrom AFB (Montana Natural Heritage Program 2004). A complete listing of threatened and endangered species found in Montana is found in Appendices A and B.

## 1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

The USAF and USFWS cooperatively prepared this Environmental Assessment (EA). The EA was prepared in accordance with the National Environmental Policy Act (NEPA), 40 CFR 1500-1508, and Air Force procedures for implementing NEPA found in 32 CFR 989, The Environmental Impact Analysis Process.

Under this guidance, the EA shall provide sufficient evidence and analysis for the decision-maker to determine whether to prepare an Environmental Impact Statement or prepare and sign a Finding of No Significant Impact (FONSI). The EA is not a decision document, but rather discloses the potential environmental consequences of implementing the proposed action and any alternatives. A decision regarding the action will be outlined in a decision notice signed by the USAF.

The EA evaluates/assesses impacts to the environment from the following alternatives:

**Alternative A:** Removal of invasive fish species through use of the piscicide rotenone.

**Alternative B:** Removal of invasive fish species by draining the pond dry.

**Alternative C:** Removal of invasive fish species through introduction of a predator species.

**Alternative D:** No action.

**Alternative E:** Removal of invasive species through use of another chemical fish toxicant (Antimycin).

#### 1.4.1 Public Scoping

Scoping for this project was conducted by the USAF. The draft EA was placed in the Great Falls Public Library and the Malmstrom AFB Library for public review and comment. A notice was placed in the *Great Falls Tribune* and the Malmstrom AFB newspaper, *The High Plains Warrior*, announcing the availability of the EA in the libraries for a Public Comment Period running from October 27, 2004 through November 13, 2004. The Draft EA was also mailed to the Montana Department of Environmental Quality, the State of Montana Department of Fish, Wildlife & Parks, (MTFWP), the Montana Department of Natural Resources and Conservation, and the Cascade County Commissioners, as well as to a private citizen that requested a copy of the EA. Copies of the public notices and letters requesting comments are in Appendix F. Only one comment was received. It was received from the MTFWP and it concurred with the findings of the EA. A copy of this comment is contained in Appendix G.

## **1.5 APPLICABLE REGULATORY REQUIREMENTS**

### **1.5.1 Air Quality**

The Montana Clean Air Act (Montana Code Annotated, Title 75, Chapter 2) essentially implements the federal Clean Air Act. The Montana Clean Air Act, implemented by the Air Quality Procedural Regulations, the Air Quality Regulations, and the Ambient Air Quality Standards, establish ambient air quality standards and permitting and monitoring procedures.

### **1.5.2 Water Quality**

The Montana Water Quality Act (Montana Code Annotated, Title 75, Chapter 5) sets forth water conservation, water quality protection, and pollution prevention and abatement measures. Implementing regulations include the Water Pollution Control Regulations (Administrative Rule of Montana [ARM], Title 16, Chapter 20, Subchapter 7). Pollutant Discharge Elimination System Rules (ARM, Title 16, Chapter 20) establish effluent limitations, treatment standards, and other requirements for point source discharge of waste into State waters. A Section 308 Short-Term Exemption from Surface Water Quality Standards for Pesticide Application will be obtained from the Department of Environmental Quality prior to applying rotenone or any other piscicide to waters of the State.

The Groundwater Pollution Control Regulations (ARM, Title 16, Section 20) establish groundwater classification, and set forth protection and permitting requirements, while the Surface Water Quality Standards (ARM, Title 16, Chapter 20, Subchapter 6) establish surface water quality criteria to ensure public health and safety and provide for water conservation.

### **1.5.3. Public Health and Safety/Hazardous Waste**

The U.S. Environmental Protection Agency (EPA) approved the use of rotenone after significant research on its potential effects on public health. When used following the label instructions, rotenone has been determined to cause little if any hazards to public health. The use of rotenone for fish control does not present a risk of unreasonable adverse effects to

humans or the environment. Hazards associated with drinking water treated with rotenone are small if low concentrations (0.25 parts per million, maximum) are used.

Rotenone is a naturally occurring substance found in the roots of tropical plants and rapidly breaks down in the environment. The EPA has not established guidelines for tolerances levels of rotenone in irrigation or potable water. There are no restrictions on the use of rotenone in waters used for irrigation, livestock consumption, or recreational swimming. Product label recommendations state, “do not swim in rotenone-treated water until the application has been completed and all the pesticide has been thoroughly mixed into the water according to labeling instructions.” EPA does not have guidelines for consumption of fish that have been killed by rotenone. However, due to the high risk of salmonella and other bacterial poisoning from fish that have been dead for a period of time, this practice is not allowed. A specimen label and material safety data sheet for the rotenone product to be used are attached (Appendix D).

The Montana Solid Waste Management Act (Montana Code Annotated, Title 75, Chapter 10) provides for coordinated State solid waste management and a resource recovery plan, waste reduction, and recycling programs.

The Hazardous Waste and Underground Storage Tank Act (Montana Code Annotated, Title 75, Chapter 10), and the Hazardous Waste Management Regulations (ARM, Title 16, Chapter 44) control the generation, storage, transportation, treatment, and disposal of hazardous wastes. The Act also authorizes the State to implement a program pursuant to the federal Resource Conservation and Recovery Act (RCRA).

The Refuse Disposal Rules (ARM, Title 16, Chapter 14, Subchapter 5) implement the Hazardous Waste Act and Regulations. The Regulations provide uniform standards for the storage, treatment, recycling, recovery, and disposal of solid waste (including hazardous waste), and transportation of hazardous waste.

#### **1.5.4 Biological Resources**

The Endangered Species Act (16 USC 1531-1543) requires Federal agencies to ensure that any actions they authorize, fund, or carry out do not jeopardize the continued existence of endangered or threatened species or destroy or adversely modify their critical habitat. Federal agencies must evaluate the effects of their actions on endangered or threatened species of fish, wildlife, and plants and their critical habitats and take steps to conserve and protect these species. The Act requires the avoidance or mitigation of all potentially adverse impacts to endangered and threatened species.

Executive Order (EO) 11990, Protection of Wetlands, requires Federal agencies to take action to avoid (to the extent practicable) the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. The intent of EO 11990 is to avoid direct and/or indirect effects from construction in wetlands if a feasible alternative is available. All Federal and federally supported activities and projects must comply with EO 11990.

### **1.5.5 Cultural, Paleontological, and Archaeological Resources**

The primary goal of the National Historic Preservation Act (NHPA) of 1966 (16 USC 470 et seq., as amended) is to ensure adequate consideration of the values of historic properties in carrying out Federal activities and attempt to identify and mitigate impacts to significant historic properties. The NHPA is the principal authority used to protect historic properties. Federal agencies must determine the effect of their actions on cultural resources and take steps to ensure they locate, identify, evaluate, and protect all resources. In addition, 36 CFR 800 defines the responsibilities of the State the Federal Governments and the Advisory Counsel on Historic Preservation (ACHP) in protecting historic properties identified in a project area. It (36 CFR 60) also establishes the National Register of Historic Places (NRHP) and defines the criteria for evaluating eligibility of cultural resources to the NRHP.

The Archaeological Resources Act of 1979 (16 USC 470a-47011, as amended) protects archaeological resources on Federal lands. The Act requires permits for excavating and removing any archaeological resources should they be discovered by an agency during site activities.



## **2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

This section addresses the alternatives including those that are practical or feasible from a technical and economic standpoint and support the underlying purpose and need for the Proposed Action based on the definition of reasonable alternatives and the selection criteria

### **2.1 SELECTION CRITERIA**

Criteria used to select an alternative were based on the specific needs of the USAF, the desired results at Pow Wow Park Pond on Malmstrom AFB, environmental factors, and budget constraints. Selection criteria are outlined below.

#### *Criteria*

- The selected alternative must be cost effective.
- The selected alternative must result in completion of the desired objective – successful, complete eradication of invasive fish species in Pow Wow Park Pond.
- The selected alternative must be compliant with Malmstrom AFB requirements for waste management, security, and environmental protection.

The USAF proposes to eradicate illegally introduced, invasive fish species from the Pow Wow Park Pond on Malmstrom AFB. Impacts to the environment were evaluated for each Alternative carried forward. Expected impacts from the No Action alternative would be insignificant or none. Existing conditions and expected impacts are discussed in Chapters 3 and 4 of this document, respectively

### **2.2 PROPOSED ACTION**

Under this alternative (Alternative A), invasive fish species in Pow Wow Park Pond would be eliminated with the piscicide rotenone. Use of rotenone is preferred as it will ensure a complete kill in the conditions found in Pow Wow Park Pond and thus, total eradication of all invasive fish species. The action would be a cooperative effort between the USAF and USFWS. The USFWS would provide assistance with poisoning Pow Wow Park Pond with

rotenone including all labor, equipment, and materials necessary to remove the invasive fish species, including goldfish and suckers. The rotenone will be administrated under the direction of individuals certified as piscicide applicators with the State of Montana. A Health and Safety Plan for Application of Rotenone has also been developed (Appendix E).

**2.2.1 Invasive Fish Eradication - Treatment with Rotenone** - The Proposed Action is to eradicate illegal, invasive fish inhabiting the waters of Pow Wow Park Pond. Rotenone is a restricted use pesticide approved by the EPA for fishery use (USEPA 2003). It is toxic to fish, killing them by blocking oxygen uptake at the cellular level. It is generally nontoxic to most mammals and birds at the concentrations used for fish, but is lethal to zooplankton and many aquatic invertebrates. To accomplish a complete kill, 2.5% synergized rotenone solution would be applied to the surface of Pow Wow Park Pond and dripped into any inflowing water. The present cost of rotenone is about \$40 per gallon. Based on the size and conditions in Pow Wow Park Pond, treatment will take 50 gallons of chemical.

The EPA regulates the use and application of pesticides including rotenone. Rotenone is designated as a category 1 pesticide due to its extreme toxicity for acute (short term) periods. It is to be administered only by applicators with a federal or state certification and is labeled as "restricted use" due to its aquatic toxicity and "potential adverse effects on humans in inhalation." The EPA has determined that the use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans and the environment. During application, all recommended safety standards and equipment will be followed and utilized to minimize potential hazardous impacts to humans. The rotenone will be administrated under the direction of individuals certified as piscicide applicators with the State of Montana. In addition, the area will be closed off to public access for 24 hours after the rotenone application is complete.

**2.2.2. Proposed Treatment Schedule** - Application is planned for the fall to ensure all fish have spawned, all fish eggs have hatched, and the pond water is at minimum level. Application of rotenone will only be performed when the water level of the pond is well below the outlet so there is no chance of rotenone treated water escaping from the pond. It is anticipated that one work day will be required to complete the rotenone treatment itself.



### **2.2.3 Minimization of Potential Environmental Impacts Due to Use of Rotenone -**

The EPA has determined that the use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans and the environment. It is registered with the EPA for use in removing fish from waters within the United States. It usually degrades rapidly in the environment without requiring neutralization. Rotenone is variously toxic to all gilled animals. Thus, any crawdads, amphibian larvae, and aquatic insects present in Pow Wow Park Pond would also be impacted by the chemical. However, insects would quickly reestablish themselves because the adult forms of most aquatic insects are winged and quite mobile. Crawdads could be reintroduced after any treatments, if they were eliminated. Amphibian larvae have not been detected in Pow Wow Park Pond during previous surveys, probably because the crawdad population consumes all egg masses that are deposited in the pond. Turtles, frogs and birds are not affected by rotenone.

**2.2.4 Waste and Storm Water Management** - During application of rotenone, all recommended safety standards would be followed and safety equipment utilized to minimize potential hazards. Wastes would be managed in accordance with Montana solid and hazardous waste management requirements and the Clean Water Act. Wastes generated from the Proposed Action would include: soiled chemical suits/gloves, cleanup materials, used spill kits if necessary, dead fish and other affected species, etc.. All dead fish would be disposed of in a sanitary and safe manner. Fish would be collected by FWMAO personnel, placed in double plastic bags and stored in refuse canisters. It would be the responsibility of the USAF to schedule next day pick-up of these canisters. Surface water would be managed in accordance with the Montana Department of Environmental Quality (DEQ) storm water program and Malmstrom AFB Storm Water Pollution Prevention Plan (MAFB 1996).

**2.2.5 Transportation and Access** - During transportation of the chemical and application, all recommended safety standards will be followed and safety equipment will be utilized to minimize potential hazards to humans and the environment. During and after application, the area will be closed off to public access until after the rotenone is completely mixed in the pond and any dead fish are removed. The EPA has determined that the use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans and the

environment. In addition, as mentioned above the area will be closed off to public access until after the rotenone is completely mixed in the pond. The area treated will be signed and USAF staff will monitor public entry for approximately 24 hours after application is complete.

**2.2.6 Monitoring** - After treatment of Pow Wow Park Pond, the area will be evaluated to assess the success of the application. Although funding has not been approved for next year, proposed monitoring of Pow Wow Park Pond prior to restocking would include sampling the pond to detect any survivors. If a complete kill has been accomplished, sentinel cages with small trout would be placed in Pow Wow Park Pond to monitor their survival before any actual fish stocking is initiated.

## **2.3 ALTERNATIVES TO THE PROPOSED ACTION**

Alternatives to the Proposed Action ( *Alternative A*: Removal of invasive fish species through use of the piscicide rotenone) include: *Alternative B*: Removal of invasive fish species by draining the pond dry; *Alternative C*: Removal of invasive fish species through introduction of a predator species; *Alternative D*: No action; and *Alternative E*: Removal of invasive species through use of another chemical fish toxicant (Antimycin). Alternatives B, C, and E were determined to be unsuitable and were removed from consideration as they failed to ensure full eradication of the invasive fish species and thus to achieve the desired outcome.

### **2.3.1 No Action Alternative**

Under Alternative D, no Action would be taken to remove invasive fish from Pow Wow Park Pond. Thus, Alternative D would not result in elimination of illegal, invasive fish species. The goldfish population and any white suckers would likely continue to survive and reproduce in the pond. This action does not achieve the desired result of improving the opportunities for recreational fishing at Pow Wow Park Pond.

### **2.3.2 Alternatives Eliminated From Further Consideration**

**2.3.2.1 Alternative B: Removal of invasive fish species by draining the pond dry -**

Alternative B proposes draining all the water from Pow Wow Park Pond. Dewatering would require pumping water from the pond using several large submersion pumps. This would take approximately 2 weeks. The water would be pumped to a site or location that would ensure the goldfish died and did not contaminate another body of water. The pond would then need to remain completely dry for approximately 2 months to ensure the complete eradication of all invasive species. Completely draining the pond would negatively affect the wetland vegetation and other species associated with the pond (crawdads, painted turtles, birds, and frogs). Refilling the pond would be dependent on the unpredictable precipitation in the Great Falls region and may take a year or possibly more. This Alternative was dropped from further consideration because of the difficulty with keeping the pond completely dry for a long period, the uncertainty of refill in a timely manner, and the potential adverse effects to associated species of the action.

**2.3.2.2. Alternative C: Introduction of a predator species -** Alternative C proposes introduction of a predator species into the pond. Two suitable species that meet the approval of Montana Fish, Wildlife and Parks and are obtainable are channel catfish (*Ictalurus punctatus*) and tiger muskies. Channel catfish are a slow-growing, long lived species that can tolerate turbid water and would probably do very well in Pow Wow Park Pond. They would not start preying on the smallest goldfish until they (catfish) were into their second or third year of life and would not become sexually mature until they were about four years old. Channel catfish can grow to a large size and could consume the largest of the goldfish in Pow Wow Park Pond, but would not completely eradicate the goldfish. Channel catfish would also prey on the suckers. However, suckers can attain a size too large for channel catfish to consume. Channel catfish could become established and self-sustaining in Pow Wow Park Pond.

Tiger muskies are an artificially created hybrid species, the result of spawning northern pike (*Esox lucius*) with muskellunge (*Esox masquinongy*) in fish hatcheries. This results in a fish that is sterile, fast growing, short-lived, and a voracious predator. Tiger muskies are produced early in the spring of the year by State-owned fish hatcheries in Ohio and Pennsylvania on an as-needed basis and shipped to the various requestors. While little data

exists on their growth rates or specific habitat requirements, they have been used in Montana with some success. While tiger muskies would most certainly consume the largest goldfish found in Pow Wow Park Pond, they would not consume the largest suckers. As with channel catfish, tiger muskies would suppress the goldfish population, but may not eradicate them. This alternative was dropped from consideration because it would not guarantee completion of the desired objective - complete eradication of the invasive fish species in the pond.

**2.3.2.3. Alternative E: Removal of invasive species through use of another chemical fish toxicant (Antimycin)** - Antimycin is an antibiotic that is EPA registered for removing fish from aquatic systems. It is lethal to trout in concentrations as low as 2 ug/l over a period of 24 hours, and is effective in cold waters with a neutral to acid pH. Like rotenone, it kills fish by inhibiting cellular respiration. If used, it would generally be applied in the same locations and using the same methods and controls as described for rotenone. Antimycin is more easily neutralized than rotenone and when used in the proper concentrations is less harmful than the recommended killing concentration of rotenone to aquatic life other than fish. Antimycin's toxicity is diminished by high alkalinity, high temperatures, sunlight, and the metabolic activity of cellular organisms. Also, it does not affect eggs in gravel. Eradication of invasive species using antimycin was dropped from consideration due to its ineffectiveness in waters with pH readings approaching 8.5. Pow Wow Park Pond has had pH readings as high as 8.2.

### 3.0 AFFECTED ENVIRONMENT

The affected environment is the existing condition/baseline against which impacts caused by the proposed action at Malmstrom AFB are assessed. Potential issues and environmental concerns are identified during analysis of the affected environment. The location and extent of the affected environment depends on characteristics of the proposed action, the resources present, and the applicable laws and policies. The potential affected environment in this case is the geology, soils, water, vegetation, fish, wildlife, and land resources in the immediate vicinity of the Pow Wow Park recreational area. The following sections describe the affected environment in terms of the air, water, geology, biology, cultural, and socioeconomic resources. Existing conditions for noise, health and safety, land use, and environmental justice are also described.

### 3.1 AIR RESOURCES

Air resources describe existing concentrations of various pollutants on climatic and meteorological conditions that influence the quality of the air. Precipitation, wind direction and speed, and atmospheric-stability conditions are factors that determine the extent of pollutant dispersion. Air monitoring studies are conducted following rotenone treatment only when there is a demand. Air monitoring may be done to document the degree of exposure of applicators or the public in the area to certain compounds. There are some compounds which have acceptable exposure limits.

#### 3.1.1 Climatology and Meteorology

Malmstrom AFB is located in north central Montana. It is on the dry eastern side of the Rocky Mountains and has a modified semiarid continental type climate. Summertime is generally pleasant, with cool nights, moderately warm and sunny days, and very little hot, humid weather. Winters are milder than would be expected of a continental location at this latitude because of frequent warm, down-slope winds (Chinooks) that produce temperature changes of 40° F or more in 24 hours (USAF 1998). July is generally the warmest month, with a mean high temperature of 84° F (Western Regional Climate Center [WRCC] 1999). January is usually the coldest month, with a mean low temperature of 13.7° F (WRCC 1999). The growing season averages 135 days per year (USAF 1998). Average wind velocity is 12.8 miles per hour from the southwest (WRCC 1999).

Humidity and precipitation are usually low, with associated large fluctuations in daily and seasonal temperatures. Average annual precipitation is 15 inches. Average annual snowfall is 43.6 inches (WRCC 1999). Most of the precipitation during the late fall, winter, and early spring falls as snow, but Chinook winds prevent large accumulations (USAF 1998).

Prevailing winds are from the southwest year-round and are generally moderate with speeds exceeding 25 mph only 2 percent of the time. Based on the average annual precipitation, the area would normally be classified as semi-arid. However, about 70 percent of the annual rainfall typically occurs during the April to September growing season, so the climate is favorable for dry land farming (USAF 1998).

### **3.1.2 Air Quality**

Under the Clean Air Act of 1970, EPA developed primary and secondary National Ambient Air Quality Standards (NAAQS) for each of the seven criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. These standards establish pollution levels in the United States that cannot legally be exceeded during a specified time period. Montana has adopted additional state air quality standards (the Montana Ambient Air Quality Standards or MAAQS). These establish statewide targets for acceptable amounts of ambient air pollutants to protect human health. According to the Montana Department of Environmental Quality, Monitoring and Data Management Bureau, the area surrounding and including Malmstrom AFB is classified as having achieved attainment for National and Montana ambient air quality standards.

## **3.2 WATER RESOURCES**

Malmstrom AFB is located on a plateau with drainage northward toward the Missouri River. Water resources consist of groundwater and surface water. Drainage features in the area are primarily ephemeral streams and coulees. Potable groundwater is present at depths greater than 100 feet below ground surface. All water used at Malmstrom AFB is supplied by the City of Great Falls and is treated surface water from the Missouri River.

### **3.2.1 Groundwater**

Groundwater resources in the region include deep aquifers (below 100 feet) and shallower aquifers of unconsolidated alluvium and bench deposits (at depths of 20 to 40 feet). Groundwater quality is variable. The major aquifers in the Malmstrom area include alluvial deposits, glacial deposits, the Kootenai Formation, and the Madison-Swift Aquifer (USAF 1998). Confined aquifers in the area tend to flow northward; flow in the shallow, unconfined aquifers typically follows topographic gradients. The depth to a major aquifer at Malmstrom AFB varies and is estimated at 100 feet to 200 feet below ground surface (USAF 1998). The Madison-Swift aquifer has the greatest potential for future development. This aquifer feeds Giant Springs, one of the largest springs in the world, located about 2 miles northwest of



Malmstrom AFB. Due to the ample surface water supply and the depth of most of the aquifers, groundwater resources have not been developed on the Base (USAF 1998).

Shallow groundwater (less than 25 feet below ground surface) has been encountered in some locations on the AFB (USAF 1998). Due to the limited supply of water and discontinuous nature of this shallow aquifer, it is unlikely to be used as a water source in the future.

### **3.2.2 Surface Water**

Malmstrom AFB lies on a plateau roughly 10 square miles in extent, with drainage northward toward the Missouri River (USAF, 1995). The Missouri River is located 0.9 miles north of the Base and serves as the principal source of potable water for Malmstrom AFB and the City of Great Falls (USAF 1996). The USFWS classified the Missouri River as a Wild and Scenic River from the confluence with the Teton River, which is 50 miles northeast of Malmstrom AFB, to the confluence of the Musselshell River, 150 miles further downstream and east of Malmstrom AFB (USAF 1998).

No perennial streams are present on Malmstrom AFB (USAF 1998). Natural drainage features consist primarily of ephemeral streams and coulees (trench-like ravines). Figure 3 shows the Surface Water Drainage Patterns on the Base. Surface water is limited to runoff from groundwater uses, stormwater, and facility operation collection systems. Three man-made impoundments exist on Malmstrom AFB to collect stormwater runoff, including Pow Wow Park Pond and two smaller ponds near the Central Heat Plant. Nine primary surface water drainage basins have been identified on Malmstrom, and consist of a system of swales, open trenches, and some covered pipes (USAF 1996). Six basins have point discharges and five of them are monitored and sampled in compliance with the Malmstrom AFB storm water permit (MAFB 1996). The Proposed Action would take place at the Pow Wow Park Recreational Area located in Malmstrom AFB Drainage Area 6.

### 3.3 GEOLOGICAL RESOURCES

Geological resources include geology, seismicity, and soils within Malmstrom AFB boundaries.

#### 3.3.1 Geology

Malmstrom AFB is located on the Sweetgrass Arch, a bedrock structural feature extending northwest between the Little Belt Mountains, 24 miles to the south, past the Base on the southwestern side and into Alberta, Canada. Stratigraphic units important to the framework of the region surrounding Malmstrom range in age from the Madison Limestone of the Mississippian era (360 million years) to the Eolian Sand of the Holocene (10,000 years) (USAF 1998). These units include sedimentary bedrock formations, unconsolidated glacial deposits, and windblown deposits. Figures 4 and 5 illustrate the geology of Malmstrom AFB. There are no known geologic hazards in this area.

#### 3.3.2 Soils

The area is located on the glaciated plains of Montana. Soils overlie glacial till with a montmorillonitic shale substrate (Montana Agricultural Experiment Station 1982). The predominant soil series is Lawther silty clay soils (USAF 1998). Soil water capacity is high and the soils tend to be fine-grained. Area soils have a high shrink-swell capacity and are rated as poor for construction purposes. The susceptibility of the soil to wind and water erosion is moderate (USAF 1998).



Figure 3. Surface Water Drainage Patterns - Malmstrom Air Force Base

Source: U.S. Air Force 1998, TetraTech EM Inc. 1999

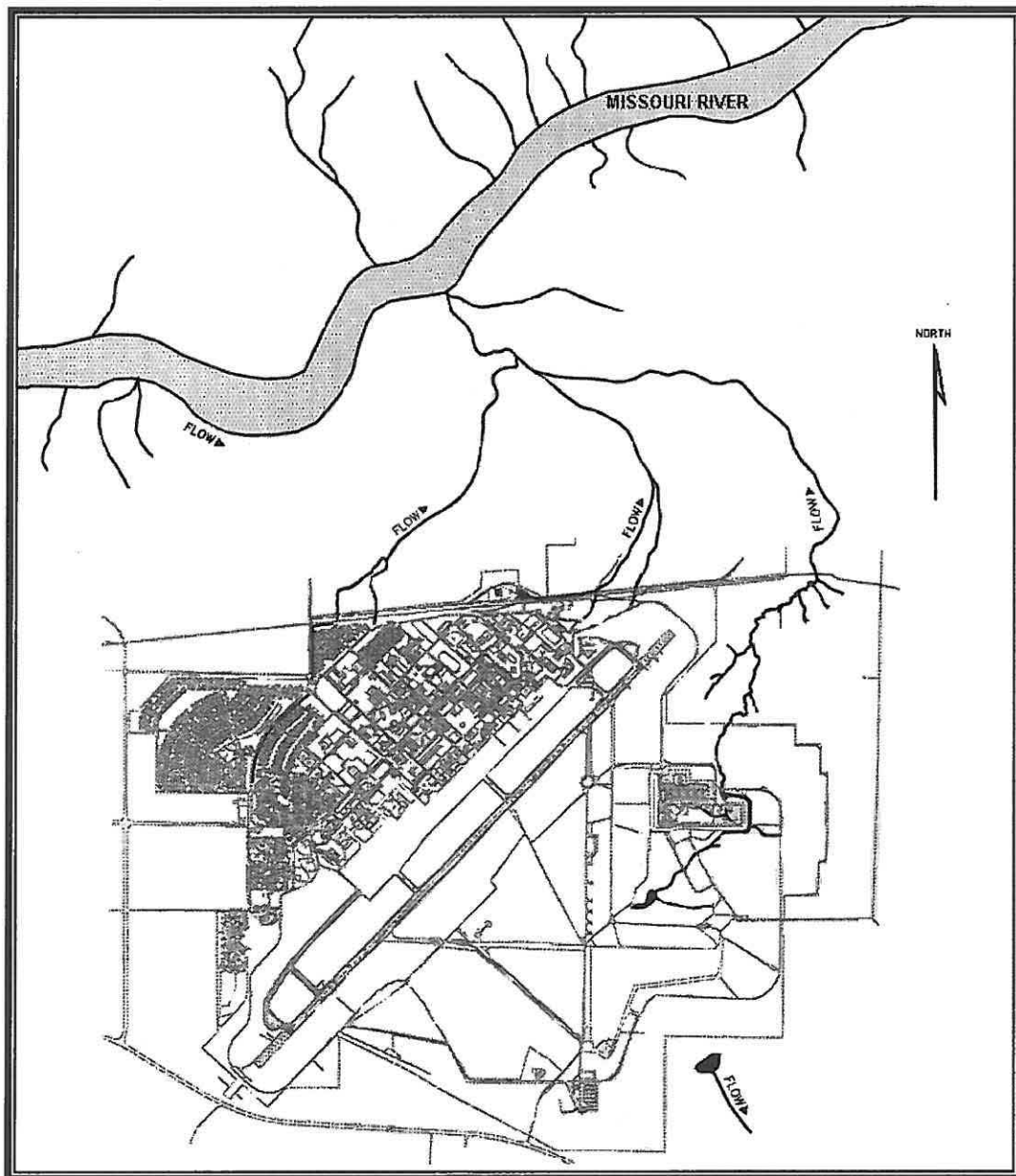


Figure 4. Depth to Bedrock - Malmstrom Air Force Base

Source: U.S. Air Force 1998, TetraTech EM Inc. 1999

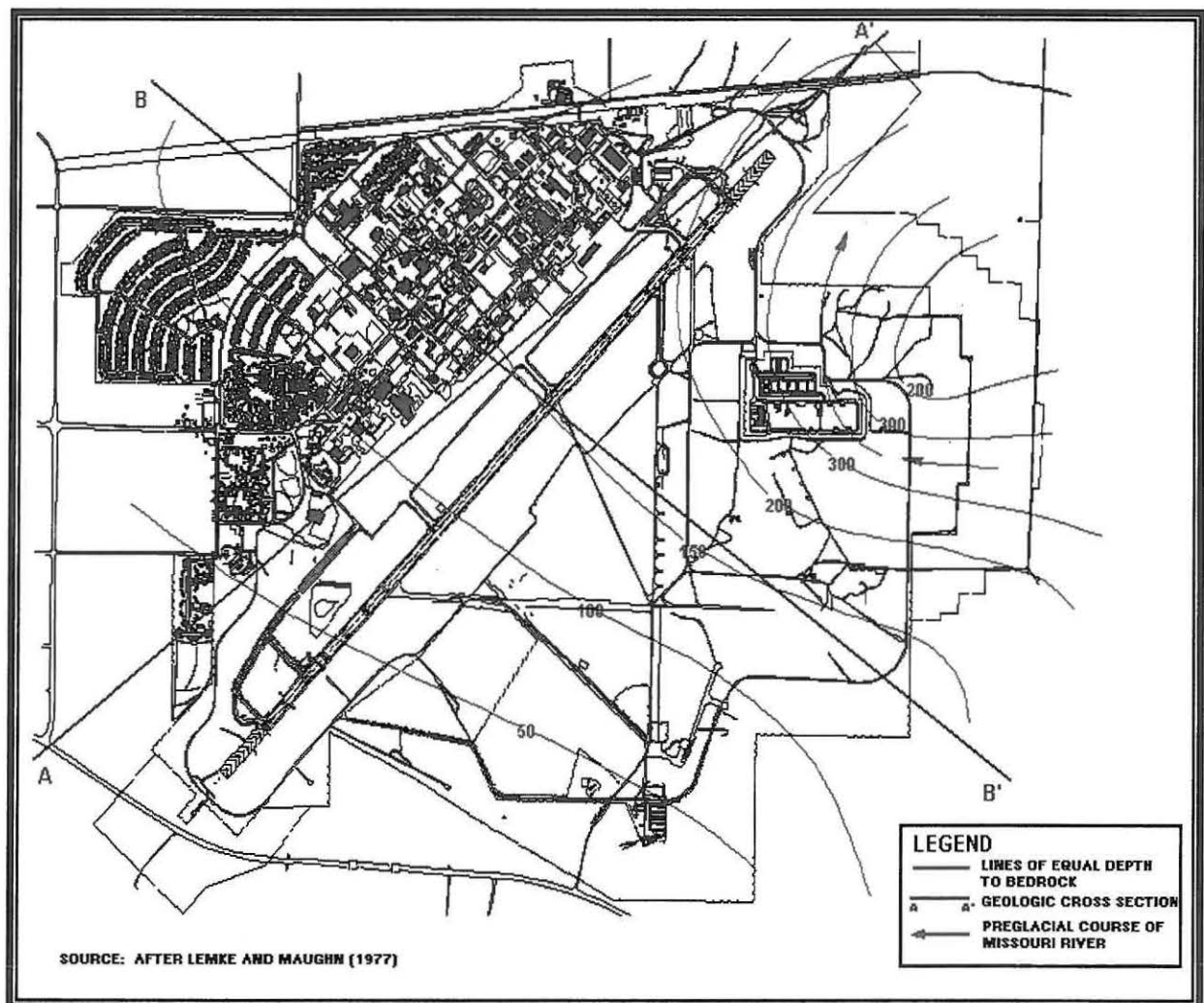
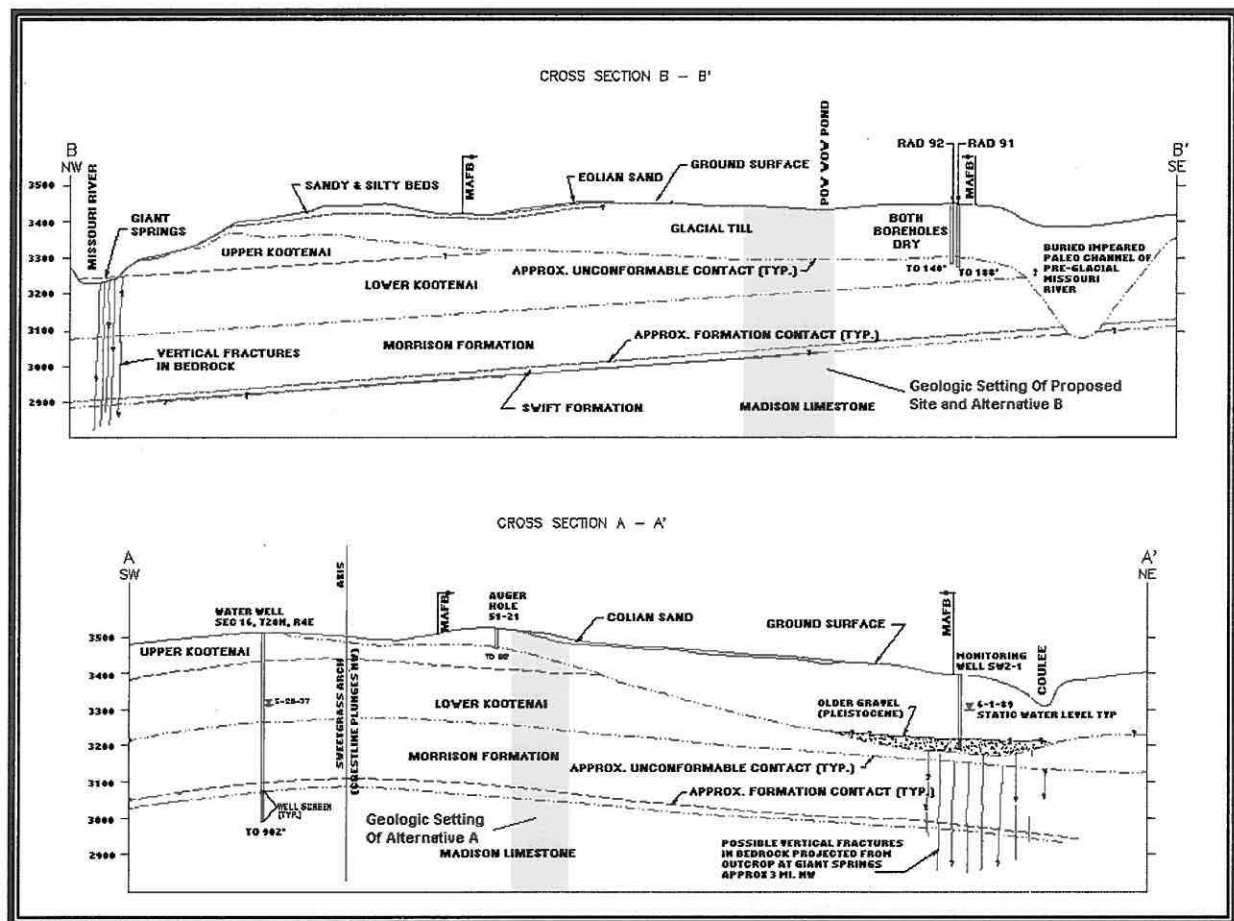


Figure 5. Geologic Cross Section - Malmstrom Air Force Base

Source: U.S. Air Force 1998, TetraTech EM Inc. 1999



### 3.4 BIOLOGICAL RESOURCES

#### 3.4.1 Vegetation, Wetlands, and Floodplains

Malmstrom AFB is located on flat to gently rolling terrain that is dominated with short grassland vegetation. Most indigenous vegetation within Malmstrom AFB boundaries has been removed initially by farming and recently by building and road construction. No threatened or endangered plant species have been identified on the Base (USAF 1994; Montana Natural Heritage Program 2000).

Malmstrom AFB lies on a high plateau south of the Missouri River, approximately 100 feet above the 100-year floodplain of the river (USAF 1998). Roughly 36 acres of wet areas and moist seeps were identified on Malmstrom AFB, ranging from standing water (Pow Wow Park Pond) to streambeds that flow only after heavy precipitation (USAF 1996). In most cases, these were man-made wet areas associated with sewage lagoons or other drainage areas.

Vegetation in the immediate area consists of upland grasses (crested wheatgrass, smooth brome, Kentucky bluegrass), stands of wetland grasses (Nebraska sedge, Baltic rush, hardstem bulrush), forbs (cattail), and willow (sandbar willow and geyser willow) which are along the shoreline of Pow Wow Park Pond. The adjacent pond shoreline is predominately wetland vegetation with dispersed sections of upland grasses or bare eroding soil. Willows occur along the east and west ends of the pond. Upland grasses compose the primary cover above the pond and adjacent open areas. The park grasses and open areas are maintained through mowing during the summer months (Hydrometrics, Inc. 2003). Mowing often occurs right up to the waterline.

#### 3.4.2 Fish and Wildlife

Several surveys of fish and wildlife species have been completed on Malmstrom AFB over the years. Historically, wildlife found in the area included bison (*Bison bison*), elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), white-

tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*) and many small mammals. Currently however, with the development and related fragmentation of habitats, wildlife species common on the Base include white-tailed jackrabbit (*Lepus townsendi*), cottontail rabbit (*Sylvilagus nuttali*), badger (*Taxidea taxus*), striped skunk (*Mustela mephitis*), Richardson's ground squirrel (*Spermophilus richardsonii*), red fox (*Vulpes vulpes*), shrews, voles (*Microtus pennsylvanicus*), and mice (*Peromyscus maniculatus*). There appears to be transient use of the area by coyotes (*Canis latrans*). Pronghorn, and mule deer are also regularly sighted on the Base. Bird species include horned larks (*Eremophila alpestris*), western meadow larks (*Sturnella neglecta*) and a variety of other songbirds, as well as shorebirds, raptors, and waterfowl.

The USFWS conducted a terrestrial and aquatic species survey and habitat assessment on Malmstrom AFB in 2001. Seventeen (17) bird species were identified on the Base including long-billed curlew (*Numenius americanus*), California gull (*Larus californicus*), common snipe (*Capella gallinago*), cliff swallows (*Petrochelidon pyrrhonota*), brown-headed blackbirds (*Molothrus ater*) and great blue heron (*Ardea herodias*). Horned larks (*Eremophila alpestris*) and grasshopper sparrows (*Ammodramus savannarum*) were very common.

During the same surveys in 2001, a prairie rattlesnake (*Crotalus viridis viridis*), plains garter snake (*Thamnophis radix*), and leopard frog (*Rana pipiens*) were recorded. Six western painted turtles (*Chrysemys picta*) and one northern leopard frog (*Rana pipiens*) were also observed in Pow Wow Park Pond. Additional observations of aquatic life in Pow Wow Park Pond included rainbow trout (*Oncorhynchus mykiss*), white suckers (*Catostomus commersoni*), crawdads (*Orconectes virelis*), fathead minnows (*Pimephales promelas*), and goldfish (*Carassius auratus*) (USFWS 2002).

No wildlife species of special concern are present on Malmstrom AFB (Montana Natural Heritage Program 2000). No federally listed threatened or endangered species are known to occur on the Base (USAF 1994). The bald eagle, a federally listed species, occurs along large river systems and lakes within Cascade County. Thus, it may occur along the Missouri River, but has not been reported in the vicinity of Malmstrom AFB. One state-recognized species

(the upland sandpiper) may be a migrant through the area. Although threatened or endangered wildlife species do not currently impose a constraint to development on Malmstrom AFB (USAF 1998) and no specific protective measures are required, consideration should be given to avoid destruction of habitat for these species.

### **3.5 CULTURAL RESOURCES**

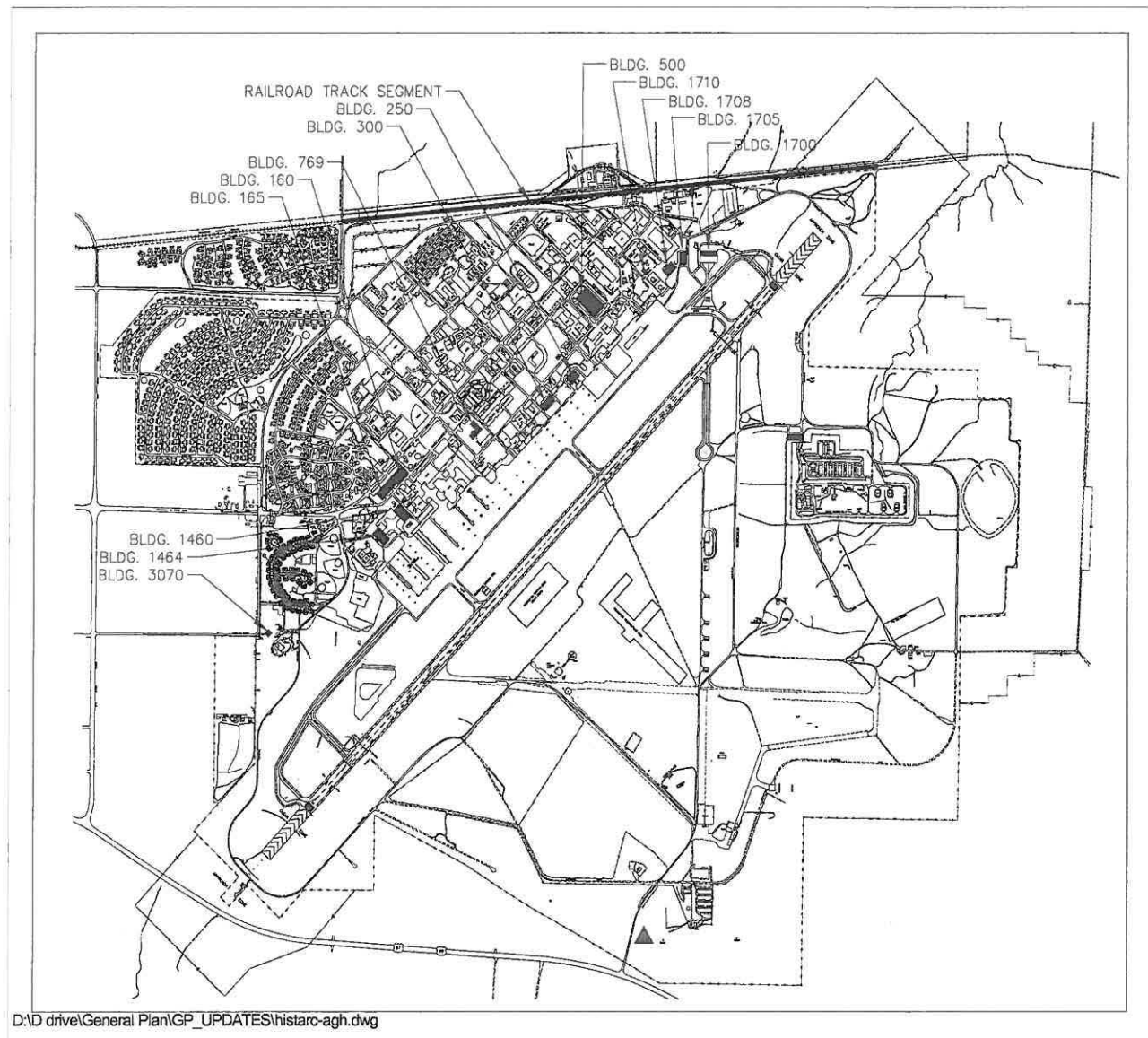
Cultural resources consist of paleontological and archeological (both prehistorical and historical) finds. While significant paleontological resources occur in Montana, the area around Malmstrom AFB is underlain by 30 to 100 feet of glacial sediments. Such areas do not tend to produce paleontological finds and none have been located within Malmstrom (USAF 1998). In addition, upland areas like those on which Malmstrom is located, have a lower potential for cultural and historic sites than areas located within a floodplain. The known locations of cultural resources on Malmstrom AFB are shown in Figure 6.

The USAF has developed a Cultural Resources Management Plan (CRMP) to provide a means for managing historic and cultural resources on the Base and missile deployment areas (USAF 1995). The CRMP identifies preservation strategies for specific archeological and historical properties including a railroad and buildings greater than 50 years old. These properties are not present in the vicinity of the Proposed Action.

In addition to the CRMP, two archeological and historical resources surveys have been conducted on Malmstrom AFB proper. A Cold War Resources Survey of Malmstrom AFB has been completed (USAF 1998). A 1994 Archaeological Survey report found one prehistoric site: a small lithic scatter that is not located on the site of the Proposed Action. A segment of the Chicago, Milwaukee, St. Paul, and Pacific Railroad (now Burlington Northern and Santa Fe Railway) is located along the northern perimeter of the installation (USAF 1995).

Figure 6. Location of Cultural Resources - Malmstrom Air Force Base

Source: *Malmstrom Air Force Base*





### **3.6 NOISE**

The Air Force defines noise as any unwanted sound that interferes with normal activities or in some way reduces the quality of the environment. In general, noise levels around Air Force installations result primarily from aircraft operations at the Base, vehicle traffic in the vicinity, or other background noise sources (USAF 1998).

Sensitive receptors are populations that are more susceptible to the effects of noise than is the general population. Potential sensitive receptors normally include hospitals, churches, residential, and wildlife areas. The nearest residence is on Base and therefore within the study area of the affected environment.

Scientific studies and social surveys conducted to appraise community reaction to all types of environmental noise have found the day-night average sound level ( $L_{dn}$ ) descriptor to be the best measure of annoyance. The  $L_{dn}$  describes the 24-hour or daily noise environment. To compute an  $L_{dn}$ , single noise events are measured using an A-weighted scale corrected for the number of events and the time of day. A 10-decibel penalty is added for noise that occurs between 10 p.m. and 7 a.m. because nighttime noise is considered more annoying than noise occurring during daytime. The  $L_{dn}$  descriptor is accepted by federal agencies, including the U.S. Army, as a standard for estimating noise impact and establishing guidelines for comparable land uses (U.S. Army Corps of Engineers 1998).

### **3.7 HEALTH AND SAFETY**

This section describes programs and activities currently in place at Malmstrom AFB and the proposed project site that address public and worker health and safety. It includes a description of general public health and safety responsibilities, solid and hazardous waste management, sewage and storm water management, environmental remediation activities, pesticide application, and harmful substances in the project area.

#### **3.7.1 Public Health Management**

Public health and safety at Malmstrom AFB is protected by the USAF and agencies of the



City of Great Falls, Cascade County, the State of Montana, and the federal government. The city and county provide police protection and emergency services. Cascade County Health Department is responsible for monitoring public health and safety issues such as drinking water quality and disease control. The Montana Department of Environmental Quality regulates waste management, toxic substance reporting, and investigation and cleanup of contaminated sites. The State of Montana also provides technical and financial assistance for occupational health concerns such as asbestos control, radon emissions, and drinking water. The 341 CES/CEV provides regulatory guidance to Malmstrom AFB personnel regarding safe use, storage, and disposal of hazardous and toxic substances and has a pollution prevention program that includes minimization of hazardous wastes and recycling. The Environmental Office of the Montana Department of Military Affairs provides the same oversight and guidance for state-operated National Guard facilities.

The EPA regulates the use and application of pesticides including rotenone. Rotenone is designated as a category 1 pesticide due to its extreme toxicity for acute (short term) periods. It is only to be administered by applicators with a federal or state certification and is labeled as “restricted use pesticide” due to its aquatic toxicity and potential adverse effects on humans in inhalation. The EPA has determined the use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans and the environment.

### **3.7.2 Solid and Hazardous Waste Management**

Solid and hazardous waste programs provide for the collection, handling, and disposal of waste materials, response operations to spills of hazardous materials or waste, and management of the Installation Restoration Program (IRP). In Montana, hazardous and solid waste issues are regulated by the Montana Department of Environmental Quality.

At Malmstrom AFB, the solid and hazardous waste programs are managed by the Environmental Management Flight (341 CES/CEV). The responsibility to develop a Spill Prevention and Response Plan and provide procedures for spill reporting, containment, cleanup, and disposal resides with the Environmental Management Flight. The Fire

Department requests support, as needed, from local volunteer departments in the event of a spill (USAF 1998).

Hazardous wastes are recorded and processed through the Environmental Management Flight and Defense Reutilization and Marketing Office (DRMO) (USAF 1998). Solid waste collection and disposal services are provided to the Base by civilian contractors and the City of Great Falls. Material is taken off Base to a private landfill. Malmstrom currently generates 4,538 tons of solid waste per year.

### **3.7.3 Storm Water Waste Management**

Storm water is considered a wastewater discharge by the Clean Water Act. Storm water is discharged from the Base in accordance with a Montana Pollution Discharge Elimination System (MPDES) General Discharge Permit for Storm Water Associated with Industrial Activity issued by the Montana DEQ. Precipitation that falls or melts in the area is managed in accordance with the Malmstrom AFB Storm Water Pollution Prevention Plan (Malmstrom AFB 1998). No storm water outfall has been identified in the vicinity of the Proposed Action (Malmstrom AFB 1998).

### **3.7.4 Environmental Remediation Activities**

The USAF is undergoing clean up of contaminated sites created by past activities under the Installation Restoration Program (IRP). Five IRP sites at Malmstrom AFB are either under investigation or undergoing cleanup activities at Malmstrom AFB (USAF 1998). None of these IRP sites is in the vicinity of the Proposed Action.

### **3.7.5 Pesticides**

Past spraying of herbicides has occurred throughout the Base and possibly at the site of the Proposed Action. Because herbicides used for base-wide spraying were biodegradable and would have dissipated from the soil in less than a year, any herbicides applied by Malmstrom in the past would likely not be present at this time (USAF 1999).

The EPA regulates the use and application of pesticides including rotenone. Rotenone is designated as a category 1 pesticide due to its extreme toxicity for acute (short term) periods. It is only to be administered by applicators with a federal or state certification and is labeled as a "restricted use pesticide" due to its aquatic toxicity and potential adverse effects on humans in inhalation.

### **3.8 SOCIOECONOMICS**

According to the U.S. Bureau of the Census, the population of the area including Malmstrom AFB and surrounding greater Great Falls-Cascade County as of 1996, is 81,091; median household income is \$30,101; and 13.8 percent of the population is at or below the poverty level. The civilian labor force totals roughly 40,000. Of the adult population over 25 years of age, 75 percent have high school or higher education (City of Great Falls Chamber of Commerce 1999). The majority of the population, 59,500 people, live in Great Falls (USAF 1998). The unemployment rate in the area was 4.9 percent as of 1994 (USAF 1998).

Malmstrom AFB plays a significant role in the regional economy, employing approximately 4,150 military and civilian employees, directly accounting for more than 13 percent of employment in the area. The Base contributes approximately \$228 million annually to the area's economy through its payroll and direct spending in the area, including construction (USAF 1998). Other major employers include the Great Falls School District, Benefis Health Care, Cascade County, and Sletten Construction. Retail sales also employ a significant portion of the local work force (City of Great Falls Chamber of Commerce 1999). Higher education facilities include Montana State University-Northern, the University of Great Falls, and the Montana State University College of Technology.

### **3.9 LAND USE**

This section provides a general description of Malmstrom AFB including historical and present mission. Land uses on Malmstrom AFB include Airfield, Aircraft Operations and Management, Industrial, Administrative, Medical, Personnel Housing, Community Commercial, Community Service, and Outdoor Recreation (Hydrometrics 2003). Land use

in the vicinity of the Base is predominantly rural - agricultural. Agriculture and rangelands extend for miles to the north, east, and south of the Base.

### **3.9.1 History of Malmstrom AFB**

Construction for an Army Air Corps base east of Great Falls began in 1942. Known as East Base, its function was to establish an air route between Great Falls and Fairbanks, Alaska, as part of the Lend-Lease program during World War II. The Base also served as a training center for B-17 bombers. After World War II, the Military Air Transport Service used the Base as a training center for C-54 transport crews. In 1956, it was renamed Malmstrom AFB and the 4061<sup>st</sup> Air Refueling Wing (ARW) arrived in 1957. The 4061<sup>st</sup> ARW was deactivated in 1961 with the arrival of the 341<sup>st</sup> Strategic Missile Wing (SMW). On 26 October 1962, the first Minuteman missile flight was completed during the Cuban Missile Crisis. By 1975, the Minuteman II ICBMs of the 564 SMW were replaced with Minuteman III ICBMs. Malmstrom AFB was redesignated as the 341<sup>st</sup> Missile Wing in September 1991. The 341<sup>st</sup> Missile Wing resumed the host unit status in July 1994, responsible for maintaining Minutemen III intercontinental ballistic missiles and operation/management of Malmstrom AFB. In 1997, the 819<sup>th</sup> RED HORSE squadron was installed at Malmstrom AFB. On 1 October 1997, the 341<sup>st</sup> Missile Wing was redesignated the 341<sup>st</sup> Space Wing (USAF 1998).

### **3.9.2 Current Mission of Malmstrom AFB**

Malmstrom AFB is home to the 341<sup>st</sup> Space Wing. The 341<sup>st</sup> Space Wing operates and maintains 200 land-based Minutemen III Intercontinental Ballistic Missiles in northcentral Montana. Associate units based and supported by Malmstrom AFB include the Air Force Office of Special Investigations; 819<sup>th</sup> RED HORSE Squadron; USAF Judiciary Area Defense Council; and Defense Reutilization and Marketing Office-Great Falls (USAF 1998).

## **3.10 ENVIRONMENTAL JUSTICE**

A National Environmental Policy Act (NEPA) evaluation of a proposed action must include an assessment of effects on minority and low-income populations, and an alternative location

or action must be considered if the Proposed Action discriminated against a minority or low-income population. Based on the 1990 Census (U.S. Bureau of the Census 1995), about 13.8 percent (11,150 people) of Cascade County's population is below the poverty level. By comparison, about 16 percent of Montana's population is below the poverty level.

#### 4.0 ENVIRONMENTAL CONSEQUENCES

The purpose of this EA is to identify the potential for significant impacts to the biophysical and human environment of a federal action. To identify the possible environmental effects, a screening level analysis was conducted. Screening consisted of identifying main elements of the proposed action and determining potential environmental disturbances caused by each element. The elements are discussed in Chapter 2, disturbances are defined in Table 1. (TetraTech EM Inc. 1999).

<b>Table 1</b> <b>Definitions of Disturbances</b> <b>Malmstrom Air Force Base Proposed Invasive Fish Eradication</b>	
<b>Disturbance</b>	<b>Definition</b>
Air	A chemical or biological release to the air or atmosphere.
Water	A disruption of surface water, groundwater, water quantity, biologic features, wetlands.
Geologic	A physical disruption of the soil, geology, topography, or chemical or biological release to the soil.
Biological	A physical disruption or chemical or biological release to the soil, geology, biologic feature, habitat, or ecosystem.
Noise	A physical disruption audible to humans or animals; usually undesirable sound.
Cultural	A physical disruption or chemical release affecting the physical or aesthetic value of a cultural resource.
Health and Safety	A physical or material disruption to workers or public; exposure to chemical, physical, or biological adversities. Generation or discharge of solid/hazardous waste that must be managed
Socioeconomics	A social or economic disruption effecting employment, population, economy, public services, and housing demand.
Land Use	A use of land that is contrary to the mission of Malmstrom AFB
Environmental Justice	Placement or completion of the Proposed Action in a location that discriminates against minority and low-income populations

A matrix was used as a screening tool in identifying how the Proposed Action may affect the various environmental parameters. Table 2 presents the extent of impacts from the Proposed

Action and No Action alternatives relative to each resource area of concern. The purpose of the matrix is to narrow the scope of potential environmental impacts associated with the overall program and focus on those consequences of concern. The matrix identifies only the potential for impacts and establishes those disturbances that may intensify, dependent upon the existing environment (TetraTech EM Inc. 1999).

<b>Table 2</b> <b>Identification of Potential Impacts</b>		
<b>Disturbance</b>	<b>Proposed Action</b>	<b>No Action</b>
Air	minimal impact	no impact
Water	minor impact	no impact
Geological	no impact	no impact
Biological	beneficial impact	no impact
Cultural	no impact	no impact
Noise	minimal impact	no impact
Health & Safety	minor impact	no impact
Socioeconomic	no impact	no impact
Land Use	beneficial impact	no impact
Env. Justice	no impact	no impact

There were five criteria used in the matrix to identify the potential for impact. The criteria are defined as follows:

- Beneficial Impact: The element is expected to improve or lessen the undesirable effect of the disturbance.
- No Impact: The element is not expected to cause a disturbance or the element is not applicable.
- Minimal Impact: The element is not expected to create a measurable impact, or the impacts are too small to cause any change in the environment.



- Minor Impact: The element is expected to cause a measurable disturbance but is within the capacity of the impacted system to absorb the change, or the impacts can be compensated for with little effort and resources so the impact is not substantial.
- Significant Impact: The element is expected to cause disturbance at a level likely to be significant in the NEPA sense. This matrix intersection would require additional analysis and preparation of an Environmental Impact Statement (EIS).

The primary impacts of the Proposed Action arise from application and effects of the rotenone. Potential impacts are measured against current baseline conditions.

## **4.1 AIR RESOURCES**

The significance of impacts to air quality is based on federal, state, and local pollution regulations or standards. A significant impact would be a violation of air quality standards, exceedance of a nonattainment criterion, or exposure of sensitive receptors to increase pollutant concentrations. A beneficial impact to air quality would be a reduction in baseline emissions.

### **4.1.1 Potential Impacts From The Proposed Action**

There is potential for minor impacts to the air quality from release of very small quantities of dispersants and emulsifiers to the air during application of rotenone. These impacts are expected to be short term in nature. EPA has approved the use of rotenone after significant research on its potential effects on public health. When used following the label instructions, rotenone has been determined to cause little if any hazards to human health. Its use for fish control does not present a risk of unreasonable adverse effects to humans or the environment. Rotenone is a naturally occurring substance found in the roots of tropical plants and rapidly breaks down in the environment. There will be small quantities of volatile organic compounds released into the air during the measuring and mixing of rotenone with water. Liquid formulations of rotenone contain dispersants and emulsifiers (primarily naphthalene, methylnaphthalene and xylenes) that add little, if any, toxicity but help to disperse the rotenone throughout the water. These dispersants and emulsifiers are incapable of carrying rotenone into the atmosphere as a vapor. Because of the temporary nature of the application



of rotenone and its characteristics, any potential air quality impacts would be short-term and limited to a localized area around Pow Wow Park Pond. No long term impacts to the air quality are anticipated. Thus, overall impacts to air resources from the Proposed Action would be insignificant.

#### **4.1.2 Potential Impacts From The No Action Alternative**

No impacts to air quality would result from the No Action alternative.

#### **4.1.3 Unavoidable and Cumulative Impacts**

Under both the Proposed Action and No Action alternatives, no cumulative impacts to air quality would be expected.

### **4.2 WATER RESOURCES**

Water resources are surface and subsurface resources that are finite but renewable. Water may be affected by physical disturbances and material releases into surface and groundwater. An impact to water resources at Malmstrom AFB would be considered significant if an aquifer, groundwater well, or surface water body is degraded resulting in a measurable change in a user's water supply. Another significant impact would be affecting the quality of surface water or groundwater so that it exceeds federal or state water quality criteria or maximum contaminant levels (MCLs). An impact would be insignificant if the change in the water quality did not exceed an MCL or the change in water quantity attributable to the proposed action was unmeasurable. Increased recharge or improved water quality are examples of beneficial impacts.

#### **4.2.1 Potential Impacts From The Proposed Action**

**Groundwater** - The ability of rotenone to move through soil is low to slight. Rotenone moves only 2 centimeters (less than one inch) in most types of soils. An exception would be in sandy soils where the movement is about 8 centimeters (slightly more than 3 inches).

Rotenone is strongly bound to organic matter in soil, so it is unlikely that rotenone would enter groundwater (Finlayson, et al, 2000).

**Surface Water** - Surface water in the pond will experience short term impacts during the rotenone treatment. The U.S. Environmental Protection Agency (EPA) approved the use of rotenone after significant research on its potential effects on public health. When used following the label instructions, rotenone has been determined to cause little if any hazards to public health. The use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans or the environment. Hazards associated with drinking water treated with rotenone are small if low concentrations (0.25 parts per million, maximum) are used. Rotenone is a naturally occurring substance found in the roots of tropical plants and rapidly breaks down in the environment. The EPA has not established guidelines for tolerances levels of rotenone in irrigation or potable water. Until these guidelines are created, other sources of water for domestic and irrigation purposes must be used during rotenone treatment. There are no restrictions on the use of rotenone in waters used for irrigation, livestock consumption, or recreational swimming. Pow Wow Park Pond is not used for drinking water, nor is it used for livestock consumption or irrigation.

As a health and safety precaution, the water in Pow Wow Park Pond will be monitored and access to the pond area will remain closed until the rotenone is completely mixed in the pond and any dead fish removed. The area treated will be signed and USAF staff will be on-site to monitor public entry for approximately 24 hours after application is complete. Storm water generated in the project area will flow back into the pond and will not impact any other surface waters.

#### **4.2.2 Potential Impacts From The No Action Alternative**

**Groundwater** - The No Action alternative would have no impact on groundwater quality.

**Surface Water** - The No Action alternative would not alter current surface water resources or drainage patterns. No measurable impacts to surface water resources would be expected.

#### **4.2.3 Unavoidable and Cumulative Impacts**

No significant cumulative impacts to water resources are expected from either of the Proposed Action or No Action alternative.

### 4.3 GEOLOGICAL RESOURCES

Impacts to surface resources would result primarily from direct disturbances associated with application of the piscicide and later from the use of the site including wind and water erosion.

#### 4.3.1 Potential Impacts from Proposed Action

**Geology** - The proposed site has no unique geological features. With the lack of unique topographic features on the Base and the absence of active seismic faults in the vicinity, the potential for impacts is insignificant. Due to the depth at which bedrock is encountered, and the nature of the Proposed Activity, it (bedrock) would not be affected by the Proposed Action.

**Soils** - The site is within an area of glacial deposits that frequently yield montmorillinitic, moisture sensitive soils. Such soils are expansive and cause foundation related problems. Terrain adjacent to Pow Wow Park Pond is relatively flat and application of the rotenone should not present a problem. Any water-borne soil erosion resulting from driving over the area for rotenone application or use of the site afterward would remain in the immediate area. The banks of the pond are fairly steep and in some areas are already highly eroded from recreational use. Pond area soils are fine silty clay that are subject to wind and water erosion into the pond. In addition, mowing often occurs right up to the waterline, enhancing desiccation of any bank vegetation that might hold soils in place. Removal of the invasive fish species is one step in improving the recreational potential of Pow Wow Park Pond. Additional actions are planned once this is completed to reduce wind and water erosion of the banks on the site.

The ability of rotenone to actually move through soil is low to slight. Rotenone moves only 2 centimeters (less than one inch) in most types of soils. An exception would be in sandy soils where the movement is about 8 centimeters (slightly more than 3 inches). Rotenone is strongly bound to organic matter in soil (Finlayson, et al, 2000). Thus, there should be no significant impact on soils from the Proposed Action.

### **4.3.2 Potential Impacts From The No Action Alternative**

**Geology** - No impacts to geology would occur from the No Action alternative.

**Soils** - No impacts to soils would occur from the No Action alternative.

### **4.3.3 Unavoidable and Cumulative Impacts**

Permanent changes to soil structure and stability can occur by disrupting and reworking certain soil types. Because of the limited impacts of the proposed action, no significant cumulative impacts with ongoing activities or other proposed activities are anticipated.

## **4.4 BIOLOGICAL RESOURCES**

Impacts to biological resources could include physical disruption or chemical or biological release to the soil, geology, biologic feature, habitat, or ecosystem. Impacts could be direct impacts such as the killing of individuals of a species, destruction or degradation of habitat, or disturbance from human activities which prevents animals from utilizing their habitat; or indirect effects such as that which ultimately results in increased use of an area thereby causing habitat degradation or eliminating/reducing use of that habitat by wildlife species.

### **4.4.1 Potential Impacts From The Proposed Action**

Direct disturbances would include minor, short-term impacts to biological resources from human and vehicle presence including possible displacement of individuals, trampling of vegetation, and noise and dust generated during application of the rotenone at the site. However, this disturbance is estimated to be no more significant than that generated by the routine recreational use at the site. Direct impacts of the Proposed Action would include removal/eradication of all fish species, including goldfish, white suckers, fathead minnows and rainbow trout, as well as any crawdads, amphibian larvae, and aquatic insects present in Pow Wow Park Pond at the time of application. However, adult forms of most aquatic insects are winged and quite mobile and thus, should quickly reestablish themselves in the

area from near by sources. Crawdads could be reintroduced after any treatments, if they were eliminated. Amphibian larvae have not been detected in Pow Wow Park Pond during previous surveys, probably because the crawdad population consumes all egg masses that are deposited in the pond. Turtles, frogs and birds would not be affected by the application of rotenone. Rotenone concentrations in the carcasses of dead fish or insects will be lower than the concentration in the water. Thus, there should be minimal risk to any animal or bird that eats dead insects or fish. Minimal to no impacts to wetland areas, ground water, significant habitat areas, or threatened or endangered species or their habitat are expected from the proposed action. Therefore, no mitigation measures are required/proposed.

Thus, while there will be temporary eradication of crawdads, aquatic insects, and possibly amphibian larvae, these effects will be only temporary. Insects, crawdads, and other species will repopulate the area. Any rainbow trout present in the pond will be eradicated during the rotenone application. However, rainbow trout normally do not overwinter in Pow Wow Park Pond anyway. Sport fish will be reintroduced/stocked into the pond the following spring after renovation activities are completed. Survival of the sport fish and overall health of the pond system will be enhanced by the project. Thus, in the long-term the Proposed Action will have a beneficial effect on the biological integrity of Pow Wow Pond.

#### **4.4.2 Potential Impacts From The No Action Alternative**

No impacts to biological resources would occur from the No Action alternative. However, invasive species would not be removed from Pow Wow Park Pond and the growth and recreational value of any introduced trout would not be enhanced.

#### **4.4.3 Unavoidable and Cumulative Impacts**

No significant impact to the surrounding habitat or biological resources is expected from implementation of the Proposed Action or alternatives even when considered with other activities scheduled for Malmstrom AFB.

## **4.5 CULTURAL RESOURCES**

Significant impacts to cultural resources would include the destruction of historic or archaeological resources or modifications to these resources destroying their integrity. Beneficial impacts are those that would enhance a resource's integrity.

### **4.5.1 Potential Impacts From The Proposed Action**

No cultural resources have been identified within the confines of the project site. No historic or prehistoric sites are found near Pow Wow Park Pond. Thus, no significant impacts on cultural resources would result from the Proposed Action.

### **4.5.2 Potential Impacts From the No Action Alternative**

No significant impacts to cultural resources are anticipated from the No Action alternative.

### **4.5.3 Unavoidable and Cumulative Impacts**

No ground or soil disturbance is anticipated during implementation of the proposed action. If any cultural resources are discovered during any phase of the proposed action, all procedures required by the Montana State Historic Preservation Office will be followed. No archeological or historic resources have been identified in or near the site. Therefore, no unavoidable or cumulative impacts are anticipated from either the Proposed Action or No Action alternative.

## **4.6 NOISE RESOURCES**

This section evaluates the relative significance of the potential change in the noise environment that would result from the proposed action. The proposed site is located in a remote area of the Base and is not in the vicinity of any buildings or areas where noise may cause a disturbance.

#### **4.6.1 Potential Impacts From Proposed Action**

Any noise generated during the proposed action would be the result of vehicles and personnel in the area and the use of motorized boats during application of the toxicant. Any noise that does occur during application of the fish toxicant should be minimal and temporary in nature so that no significant impacts should result.

#### **4.6.2 Potential Impacts From The No Action Alternative**

No significant impacts in terms of noise are anticipated from the No Action alternative.

#### **4.6.3 Unavoidable and Cumulative Impacts**

Noise from actual implementation of the Preferred Alternative (poisoning of Pow Wow Park Pond) would have no significant impact. No other ongoing activities would create a significant cumulative impact when considered together with the Proposed Action or No Action alternative.

### **4.7 HEALTH AND SAFETY**

This section evaluates the relative significance of potential changes affecting health, safety and wastes generated from the proposed action. An impact is defined as a physical or material disruption to workers or the public; exposure to chemical, physical, or biological adversities; or generation or discharge of solid/hazardous waste that must be managed. A Health and Safety Plan for Application of Rotenone has been developed (Appendix D), which outlines specific measures to be implemented to minimize risks to human health and safety.

#### **4.7.1 Potential Impacts From Proposed Action**

The Proposed Action is to eradicate invasive fish in Pow Wow Park Pond using rotenone, an EPA approved chemical for fishery use. While rotenone is lethal to fish, zooplankton, and



many aquatic invertebrates, it is generally nontoxic to mammals and birds. In addition, it usually degrades rapidly in the environment without requiring neutralization. The EPA has determined that use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans or the environment.

The rotenone used at Pow Wow Park Pond would be administered under the direction of individuals certified as piscicide applicators with the State of Montana. The only risks to human health and safety are from the handling of concentrated rotenone during the mixing and application process. During transportation of the chemical and application, all recommended safety standards would be followed and safety equipment would be utilized to minimize potential hazards to humans and the environment. In addition, both during and after application, the area will be closed off to public access until 24 hours after the application of rotenone is complete. The area treated would be signed and USAF staff would be on-site to monitor public entry. Wastes would be managed in accordance with Montana solid and hazardous waste management requirements and the Clean Water Act. All wastes generated from the Proposed Action, including dead fish, would be disposed of in a sanitary and safe manner. Fish would be collected via FWMAO personnel, placed in double plastic bags, and stored in refuse canisters. USAF personnel would schedule next day pick-up of these canisters. Surface water would be managed in accordance with the Montana Department of Environmental Quality (DEQ) storm water program.

In view of the precautions and procedures outlined above, impacts of the Proposed Action should be minor in nature and result in no significant impact to health or safety.

#### **4.7.2 Potential Impacts From The No Action Alternative**

The No Action alternative would not result in any poisoning or change in the project area, and therefore, would not impact health and safety.

### **4.7.3 Unavoidable and Cumulative Impacts**

Unavoidable impacts inherent with the Proposed Action include the safety hazards associated with the use of a toxicant like rotenone. There would be some unavoidable waste generation from the Proposed Action in the form of dead fish and other aquatic species, used chemical suits and protective gear, etc.. However, the precautions and procedures outlined above are designed to minimize the potential for any adverse impacts. Thus, there should be no significant cumulative impacts to human health or safety or waste management programs at Malmstrom AFB from either alternative.

## **4.8 SOCIOECONOMIC IMPACTS**

Socioeconomic impacts include a social or economic disruption effecting the employment, population, economy, public services, and housing demand in an area. Examples would be the addition or loss of jobs, additional personnel to the work force or increases or decreases in the cash flow to the local economy. The significance of an adverse impact would be measured against annual changes in socioeconomic characteristics. Based on evaluation of both the Proposed Action and No Action alternative, there should be no significant impacts to the socioeconomic environment from either alternative.

### **4.8.1 Potential Impacts From The Proposed Action**

The Proposed Action would not have any significant socioeconomic impacts. Hopefully, removal of invasive fish species and follow-up activities to enhance recreational opportunities at Pow Wow Park Pond will result in increased use of the area.

### **4.8.2 Potential Impacts From The No Action Alternative**

The no action alternative would result in no change to the existing situation, would not increase fishing use at the pond, or add to the local economy and would have no impact on socioeconomics in the area.

### **4.8.3 Unavoidable and Cumulative Impacts**

Under both the Proposed Action and No Action alternatives, there should be no cumulative impacts to the socioeconomics in the area.

## **4.9 LAND USE IMPACTS**

Impacts on Land Use could be changes in the amount or type of use in an area, or use of the land that was contrary to the mission of Malmstrom AFB.

### **4.9.1 Potential Impacts From The Proposed Action**

The Proposed Action would not change land use in the area. Use of rotenone at Pow Wow Park Pond will remove invasive fish species and enhance recreational opportunities at the pond, which should result in increased recreational use of the area.

### **4.9.2 Potential Impacts From The No Action Alternative**

The No Action alternative would have no impact on land use in the area.

### **4.9.3 Unavoidable and Cumulative Impacts**

Under both the Proposed Action and No Action alternatives, there should be no cumulative impact on land use.

## **4.10 ENVIRONMENTAL JUSTICE IMPACTS**

Impacts to environmental justice have the potential to occur if a Proposed Action took place in a location that discriminates against or would adversely impact low-income and minority populations.

#### **4.10.1 Potential Impacts From The Proposed Action**

The Proposed Action alternative will increase recreational opportunities in the area of Pow Wow Park Pond. These opportunities would be available for all Base personnel and thus, would not adversely impact either low-income or minority populations.

#### **4.10.2 Potential Impacts From The No Action Alternative**

The No Action alternative would have no impact on low-income or minority populations.

#### **4.10.3. Unavoidable and Cumulative Impacts**

The Proposed Action and No Action alternatives would have no cumulative impact on minority and low-income populations.

### **5.0 COMPARISON OF ALTERNATIVES**

Chapter 4 of the EA provides a comparison of the Proposed Action and No Action Alternatives. Under the Proposed Action, air resources would be temporarily impacted by air-blown dust and application of rotenone. However, because of the temporary nature of the application and the characteristics of rotenone, any potential air quality impacts would be short-term and limited to a localized area around Pow Wow Park Pond. There would also be a minor increase in noise during application of the piscicide under the Proposed Action. Since rotenone is strongly bound to organic matter and movement through soil is low to slight, it is unlikely any rotenone would enter the groundwater.

Surface water in the pond would experience short term adverse impacts during the rotenone treatment. However, use of rotenone for fish control poses little if any hazard to public health or the environment. Hazards associated with drinking water treated with rotenone are small if low concentrations (0.25 parts per million, maximum) are used. No restrictions exist for use of rotenone in waters used for irrigation, livestock consumption, or recreational swimming.

Biological resources may experience minor adverse impacts in the form of displacement during the rotenone application as a result of the temporary increase in noise and human presence. Direct impacts of the Proposed Action would include removal/eradication of invasive fish species as well as any crawdads, amphibian larvae, and aquatic insects present in Pow Wow Park Pond at the time of application. However, aquatic insects should quickly reestablish themselves in the area from near by sources. Crawdads could be reintroduced after any treatments; and amphibian larvae have not been detected in the pond. Turtles, frogs, birds and other mammal species would not be affected by the application of rotenone. Thus, while adverse impacts from the Proposed Action are possible as with the risk to health and safety resulting from application of any chemical pesticide or piscicide, they are expected to be minor and insignificant. Overall, the Proposed Action is expected to result in beneficial impacts on the biological resources and recreational opportunities of the area. No beneficial impacts are predicted for the No Action Alternative.

## **6.0 MITIGATION MEASURES**

The 1978 CEQ regulations for implementing NEPA recognize the following five means of mitigating an environmental impact:

- Avoidance (No Action)
- Limitation of Action (Minimization)
- Restoration of Environment (Remediation)
- Preservation and Maintenance Operation (Reduction)
- Replacement (Compensation)

The EPA has determined use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans and the environment. It usually degrades rapidly in the environment without requiring neutralization. However, proposed measures to mitigate any possible adverse impacts identified as part of this EA are noted below.

## **6.1 AIR QUALITY**

Increased risk to health and safety, mainly to applicators, from the rotenone treatment through

inhalation or improper exposure will be mitigated by careful management of the fish toxicant and any other potentially hazardous chemicals. All applicators and individuals assisting in the application will be in proper safety equipment including full face respirators (for applicators) to minimize potential hazards and public access will be limited during the application.

## **6.2 BIOLOGICAL RESOURCES**

Direct disturbance from human and vehicle presence would be no more than that generated by the routine recreational use at the site and would require no mitigation. Direct impacts of the Proposed Action would include removal/eradication of invasive fish species will and temporary eradication of crawdads, aquatic insects, and possibly amphibian larvae. However, these effects will be only temporary. Sport fish will be reintroduced/stock into the pond once renovation activities are completed. Insects and other species should quickly reestablish themselves from near by sources. Crawdads could be reintroduced after any treatments, if they were eliminated. Since amphibian larvae have not been detected in Pow Wow Park Pond, mitigation for impact to them would not be required. Survival of the sport fish and overall health of the pond system will be enhanced by the Proposed Action. Impacts to wetland areas, ground water, significant habitat areas, or threatened or endangered species or their habitat are expected to be minimal to none from the proposed action; therefore, no mitigation measures are required/proposed. Thus, in the long-term the Proposed Action will have a beneficial effect on the biological integrity of Pow Wow Park Pond.

## **6.3 HEALTH AND SAFETY**

The rotenone will be administrated under the direction of individuals certified as piscicide applicators with the State of Montana. All applicators and individuals assisting in the application will be in proper safety equipment including full face respirators (for applicators) to minimize potential hazards. During and after application, the area will be closed off to public access until the application of the rotenone is complete. The area treated will be signed and USAF staff will be on-site to monitor public entry.

## **6.4 WASTE AND STORM WATER MANAGEMENT**

During transportation of the chemical and application of rotenone, all recommended safety standards would be followed and safety equipment utilized to minimize potential hazards to humans and the environment. All wastes would be managed in accordance with Montana solid and hazardous waste management requirements and the Clean Water Act. Wastes generated from the Proposed Action (soiled chemical suits and gloves, cleanup materials, used spill kits if necessary, dead fish and other affected species, etc.) would be disposed of in a sanitary and safe manner. Fish would be collected, placed in double plastic bags, and stored in refuse canisters for next day pick-up of these canisters. Surface water would be managed in accordance with the Montana Department of Environmental Quality (DEQ) storm water program. Storm water generated in the project area will flow back into Pow Wow Park Pond and will not impact any other surface waters.

## **6.5 MONITORING**

During and after treatment of Pow Wow Park Pond, the area will be closed off to public access for 24 hours after the completion of the rotenone application. The area treated will be signed and USAF staff will be on-site to monitor public entry.

## **7.0 CONCLUSION**

In accordance with the National Environmental Policy Act of 1960, as amended, an evaluation of the identified and cumulative effects has been prepared for the actions described in the EA. The determination has been made that the Proposed Action will have no significant impact to the quality of the human or natural environment. Therefore, an Environmental Impact Statement is not warranted.



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## **APPENDIX A**

### **PHOTOGRAPH OF THE PROJECT AREA**



Pow Wow Park Pond, Malmstrom Air Force Base

## **APPENDIX B**

### **Threatened, Endangered and Candidate Species in Montana**

# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
MONTANA FIELD OFFICE  
100 N. PARK, SUITE 320  
HELENA, MT 59601  
PHONE (406) 449-5225, FAX (406) 449-5339

September 2004

## THREATENED, ENDANGERED AND CANDIDATE SPECIES IN MONTANA Endangered Species Act

ENDANGERED (E) - Any species that is in danger of extinction throughout all or a significant portion of its range.

THREATENED (T) - Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

CANDIDATE (C) - Those taxa for which the Service has sufficient information on biological status and threats to propose to list them as threatened or endangered. We encourage their consideration in environmental planning and partnerships, however, none of the substantive or procedural provisions of the Act apply to candidate species.

NON-ESSENTIAL EXPERIMENTAL POPULATION (XN) - A population of a listed species reintroduced into a specific area that receives more flexible management under the Act.

CRITICAL HABITAT (CH) - The specific areas (i) within the geographic area occupied by a species, at the time it is listed, on which are found those physical or biological features (I) essential to conserve the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by the species at the time it is listed upon determination that such areas are essential to conserve the species.

COMMON NAME	SCIENTIFIC NAME	STATUS	RANGE - MONTANA
Black-footed Ferret	<i>Mustela nigripes</i>	E/XN	Prairie dog complexes; Eastern Montana
Gray Wolf	<i>Canis lupus</i>	T/XN	Forests; Western Montana
Whooping Crane	<i>Grus americana</i>	E	Wetlands; migrant eastern Montana
Least Tern	<i>Sterna antillarum</i>	E	Yellowstone, Missouri River sandbars, beaches; Eastern Montana
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	E	Bottom dwelling; Missouri, Yellowstone Rivers
White Sturgeon (Kootenai River population)	<i>Acipenser transmontanus</i>	E	Bottom dwelling; Kootenai River

COMMON NAME	SCIENTIFIC NAME	STATUS	RANGE - MONTANA
Grizzly Bear	<i>Ursus arctos horribilis</i>	T	Alpine/subalpine coniferous forest; Western Montana
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	Forested riparian; statewide
Piping Plover	<i>Charadrius melodus</i>	T  CH	Missouri River sandbars, alkali beaches; northeastern Montana  Alkali lakes in Sheridan County; riverine and reservoir shoreline in Garfield, McCone, Phillips, Richland, Roosevelt and Valley counties
Water Howellia	<i>Howellia aquatilis</i>	T	Wetlands; Swan Valley, Lake and Missoula Counties
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	T	River meander wetlands; Jefferson, Madison, Beaverhead, Gallatin, Broadwater Counties
Bull trout (Columbia River basin and St. Mary - Belly River populations)	<i>Salvelinus confluentus</i>	T  Proposed CH	Clark Fork, Flathead, Kootenai, St. Mary and Belly river basins; cold water rivers & lakes  Streams, lakes and reservoirs in the St. Mary- Belly river basin
Canada lynx (contiguous U.S. population)	<i>Lynx canadensis</i>	T	Western Montana - montane spruce/fir forest
Spalding's Campion (or "catchfly")	<i>Silene spaldingii</i>	T	Upper Flathead River and Fisher River drainages; Tobacco Valley - open grasslands with rough fescue or bluebunch wheatgrass
Arctic grayling (fluvial population)	<i>Thymallus arcticus</i>	C	Big Hole River and other tributaries; upper Missouri River
Warm spring zaitzevian riffle beetle	<i>Zaitzevia thermae</i>	C	Gallatin County - warm springs
Slender (or linearleaf) moonwort	<i>Botrychium lineare</i>	C	Glacier, Lake Counties - meadows in conifer forests
Yellow-billed cuckoo (western population)	<i>Coccyzus americanus</i>	C	Population west of the Continental Divide; riparian areas with cottonwoods and willows



## **APPENDIX C**

### **THREATENED, ENDANGERED AND CANDIDATE SPECIES MONTANA COUNTIES**

County	Scientific Name	Common Name	Status
<b>CARTER</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>CASCADE</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT
<b>CHOUTEAU</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
	<i>Lynx canadensis</i>	Canada Lynx	LT
<b>CUSTER</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
	<i>Grus americana</i>	Whooping Crane	LE
<b>DANIELS</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<b>DAWSON</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Grus americana</i>	Whooping Crane	LE
<b>DEER LODGE</b>			
	<i>Thymallus arcticus</i>	Montana Arctic Grayling	C
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Canis lupus</i>	Gray Wolf	LT, XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT
<b>FALLON</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Grus americana</i>	Whooping Crane	LE
<b>FERGUS</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>FLATHEAD</b>			
	<i>Salvelinus confluentus</i>	Bull Trout	LT
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Silene spaldingii</i>	Spalding's Campion	LT
	<i>Canis lupus</i>	Gray Wolf	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT

County/Scientific Name	Common Name	Status
<b>GALLATIN</b>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
<i>Zaitzevia therae</i>	Warm Spring Zaitzevian Riffle Beetle	C
<i>Spiranthes diluvialis</i>	Ute Ladies' Tresses	LT
<i>Canis lupus</i>	Gray Wolf	XN
<i>Lynx canadensis</i>	Canada Lynx	LT
<b>GARFIELD</b>		
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
<i>Charadrius melodus</i>	Piping Plover	LT, CH
<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>GLACIER</b>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
<i>Canis lupus</i>	Gray Wolf	LT
<i>Lynx canadensis</i>	Canada Lynx	LT
<i>Salvelinus confluentus</i>	Bull Trout	LT, PCH
<i>Botrychium lineare</i>	Slender Moonwort	C
<b>GOLDEN VALLEY</b>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<i>Mustela nigripes</i>	Black-footed Ferret	LE
<i>Lynx canadensis</i>	Canada Lynx	LT
<b>GRANITE</b>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<i>Canis lupus</i>	Gray Wolf	LT, XN
<i>Lynx canadensis</i>	Canada Lynx	LT
<i>Salvelinus confluentus</i>	Bull Trout	LT
<b>HILL</b>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>JEFFERSON</b>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<i>Spiranthes diluvialis</i>	Ute Ladies' Tresses	LT
<i>Canis lupus</i>	Gray Wolf	LT, XN
<i>Lynx canadensis</i>	Canada Lynx	LT
<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>JUDITH BASIN</b>		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<i>Lynx canadensis</i>	Canada Lynx	LT

County	Scientific Name	Common Name	Status
<b>LAKE</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Howellia aquatilis</i>	Water Howellia	LT
	<i>Silene spaldingii</i>	Spalding's Campion	LT
	<i>Canis lupus</i>	Gray Wolf	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT
	<i>Botrychium lineare</i>	Slender Moonwort	C
<b>LEWIS AND CLARK</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Canis lupus</i>	Gray Wolf	LT, XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>LIBERTY</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>LINCOLN</b>			
	<i>Acipenser transmontanus</i>	White Sturgeon (Kootenai River Pop.)	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Silene spaldingii</i>	Spalding's Campion	LT
	<i>Canis lupus</i>	Gray Wolf	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT
	<i>Botrychium lineare</i>	Slender Moonwort	C
<b>MADISON</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Spiranthes diluvialis</i>	Ute Ladies' Tresses	LT
	<i>Canis lupus</i>	Gray Wolf	XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
<b>McCONE</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Charadrius melodus</i>	Piping Plover	LT, CH
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
	<i>Grus americana</i>	Whooping Crane	LE
<b>MEAGHER</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT

County	Scientific Name	Common Name	Status
<b>MINERAL</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Canis lupus</i>	Gray Wolf	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT
<b>MISSOULA</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Howellia aquatilis</i>	Water Howellia	LT
	<i>Canis lupus</i>	Gray Wolf	LT, XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT
	<i>Coccyzus americanus</i>	Yellow-billed cuckoo (western pop.)	C
<b>MUSSELSHELL</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>PARK</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Canis lupus</i>	Gray Wolf	XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
<b>PETROLEUM</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>PHILLIPS</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Charadrius melodus</i>	Piping Plover	LT, CH
	<i>Mustela nigripes</i>	Black-footed Ferret	LE, XN
<b>PONDERA</b>			
	<i>Charadrius melodus</i>	Piping Plover	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Canis lupus</i>	Gray Wolf	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<b>POWDER RIVER</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>POWELL</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Canis lupus</i>	Gray Wolf	LT, XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT

County	Scientific Name	Common Name	Status
<b>PRAIRIE</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<b>RAVALLI</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Canis lupus</i>	Gray Wolf	XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT
	<i>Coccyzus americanus</i>	Yellow-billed cuckoo (western pop.)	C
<b>RICHLAND</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Charadrius melodus</i>	Piping Plover	LT, CH
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
	<i>Grus americana</i>	Whooping Crane	LE
<b>ROOSEVELT</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Charadrius melodus</i>	Piping Plover	LT, CH
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
	<i>Grus americana</i>	Whooping Crane	LE
<b>ROSEBUD</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
<b>SANDERS</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Canis lupus</i>	Gray Wolf	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT
	<i>Botrychium lineare</i>	Slender Moonwort	C
<b>SHERIDAN</b>			
	<i>Charadrius melodus</i>	Piping Plover	LT, CH
	<i>Grus americana</i>	Whooping Crane	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<b>SILVER BOW</b>			
	<i>Thymallus arcticus</i>	Montana Arctic Grayling	C
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Canis lupus</i>	Gray Wolf	LT, XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Salvelinus confluentus</i>	Bull Trout	LT



County	Scientific Name	Common Name	Status
<b>STILLWATER</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Canis lupus</i>	Gray Wolf	XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>SWEET GRASS</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Canis lupus</i>	Gray Wolf	XN
	<i>Lynx canadensis</i>	Canada Lynx	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>TETON</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Ursus arctos horribilis</i>	Grizzly Bear	LT
	<i>Canis lupus</i>	Gray Wolf	LT
	<i>Lynx canadensis</i>	Canada Lynx	LT
<b>TOOLE</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
<b>TREASURE</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
<b>VALLEY</b>			
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Charadrius melodus</i>	Piping Plover	LT, CH
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Grus americana</i>	Whooping Crane	LE
<b>WHEATLAND</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE
	<i>Lynx canadensis</i>	Canada Lynx	LT
<b>WIBAUX</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE
	<i>Sterna antillarum athalassos</i>	Interior Least Tern	LE
	<i>Grus americana</i>	Whooping Crane	LE
<b>YELLOWSTONE</b>			
	<i>Haliaeetus leucocephalus</i>	Bald Eagle	LT
	<i>Mustela nigripes</i>	Black-footed Ferret	LE



## **APPENDIX D**

### **ROTENONE SPECIMEN LABEL AND MATERIAL SAFETY DATA SHEET**

Product: 655-421      Prentox® Synpren-Fish™ Toxicant

**Material Safety Data Sheet**  
U.S. Department of Labor (OSHA 29 CFR 1910.1200)

**Manufacturer's Name:**      Prentiss Incorporated  
   C. B. 2000  
   Floral Park, NY 11001  
**Telephone Number:**      (516) 326-1919

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**Section 1: Chemical Identification**

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**Product:**      655-421      Prentox® Synpren-Fish™ Toxicant  
**EPA Signal Word:**      DANGER

**Active Ingredients (%):**      Rotenone (2.5%)      (CAS # 83-79-4)  
   Other Cube Resins (5%)      N/A  
   Piperonyl Butoxide Technical (2.5%)      (CAS # 51-03-6)

**Chemical Names:**      Rotenone – N/A  
   Piperonyl Butoxide Technical – (Butylcarbityl) (6-Propylpiperonyl) ether

**Chemical Class:**      Mixture, a.i.'s, rotenone and piperonyl butoxide technical

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**Section 2: Composition/ Information On Ingredients**

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Material:	OSHA	ACGIH	NTP/IARC/OSHA	
	PEL	TLV	Other	Carcinogen
Rotenone	(TWA) 5 mg/ M³	(STEL) 10 mg/M³ (TWA) 5 mg/M³		No/No/No
Other associated cube resins	Not Est.	Not Est.		
Piperonyl Butoxide Technical	Not Est.	Not Est.		No/No/No
Xylene Range Aromatic Solvent (CAS # 64742-95-6) (Not to exceed 90%)	Supplier recommendation 100 ppm			
Contains the following ingredients, by weight (typical):				
1,2,4-Trimethyl Benzene (CAS # 95-63-6)	32.0		(TWA) 25 ppm	
Mixed Xylenes (CAS # 1330-20-7)	3.0		(TWA) 100 ppm	
Cumene (CAS # 98-82-8)	1.5		(TWA) 50 ppm	
Ethyl Benzene (CAS # 100-41-4)	0.5		(TWA) 100 ppm	
Emulsifier #1 (CAS # N/A)	N/D	N/D		
Emulsifier #2 (CAS # N/A)	N/D	N/D		

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**Section 3: Hazards Identification**

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Clear liquid with mild odor. Fatal if inhaled. May be fatal if swallowed. Harmful if absorbed through skin. Causes substantial but temporary eye injury. Causes skin irritation. This pesticide is extremely toxic to fish.

**Potential Health Effects:**

Primary Routes of Entry: Inhalation, ingestion, skin and eye contact.

Product: 655-421      Prentox® Synpren-Fish™ Toxicant

**Health Hazards (Acute and Chronic):** Causes mucous membrane irritation. Chronic exposure can cause damage to liver and/or kidneys. May be fatal if swallowed. May cause eye injury. Causes skin irritation. Do not get in eyes, on skin or on clothing. Toxicity of other components: This product contains a Xylene Range Aromatic Solvent composed of xylenes, ethylbenzenes and aromatic naphtha containing trimethylbenzenes. Inhalation of solvent vapors at high concentrations can cause central nervous system depression, respiratory tract irritation, asphyxiation, cardiac stress, and coma. Exposure to extremely high levels of xylenes may cause kidney or liver damage.

**Signs and Symptoms of Overexposure:** Can cause skin irritation. Ingestion or inhalation can cause numbness, nausea, vomiting and tremors.

**Medical Conditions Generally Aggravated by Exposure:** None known.

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#### Section 4: First Aid Measures

**If swallowed,** call a physician or Poison Control Center. Do not induce vomiting. This product contains aromatic petroleum solvent. Aspiration may be a hazard. Promptly drink a large quantity of milk, egg white, and gelatin solution, or if these are not available, water. Avoid alcohol.

**If inhaled,** remove victim to fresh air. If not breathing, administer artificial respiration, preferably by mouth to mouth. Get medical attention.

**If on skin,** wash with plenty of soap and water. Get medical attention if irritation persists.

**If in eyes,** flush eyes with plenty of water. Get medical attention if irritation persists.

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#### Section 5: Fire Fighting Measures

##### Fire and Explosion

Flash Point (Method Used):

105° F. Closed cup.

Flammable Limits:

LEL: 1.9

UEL: 12.6 (Solvent - approximate)

NFPA Hazard Ratings:

Health:

2

Flammability:

2

Reactivity: 0

**Extinguishing Media:** CO<sub>2</sub>, foam, dry chemical, or water spray.

**Special Fire Fighting Procedures:** Do not inhale smoke. Use self-contained breathing apparatus and protective clothing. This product is extremely toxic to fish, and is toxic to birds and other wildlife, prevent spread of contaminated runoff.

**Unusual Fire and Explosion Hazards:** When heated to decomposition, product emits acrid smoke and fumes.

##### Flammability Classification/Rating:

NFPA/OSHA Class: II

NFPA Rating (Fire): 2

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#### Section 6: Accidental Release Measures

Wear protective equipment, as required, to prevent contact with product or its vapors. Cover the spilled material with generous amounts of absorbent material, such as clay, diatomaceous earth, sand or sawdust. Sweep the contaminated absorbent onto a shovel and put the sweepings into a salvage drum. Dispose of wastes as below. Place any leaking container into a similar drum or glass container. Mark the drum or container with name of product, ingredient statement, precautionary statements and signal word. Contact us for replacement label. This product is extremely toxic to fish. Fish kills are expected at recommended rates. Keep it out of lakes, streams or ponds except under use conditions.

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**Section 7: Handling and Storage**

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Do not contaminate water, food or feed by storage or disposal. Store in a dry place away from temperature extremes. Avoid inhalation of vapors. Harmful if swallowed, inhaled or absorbed through skin. Avoid contact with skin. Wear clean protective clothing.

**Other precautions:** Periodically inspect stored materials.

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**Section 8: Exposure Controls/Personal Protection**

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**Respiratory protection:** Mixers and handlers: Do not inhale. Use NIOSH certified respirator for organic vapor protection.

**Ventilation:**

**Local Exhaust:** As required to meet TLV.

**Special:** Not applicable.

**Mechanical:** As required to meet TLV.

**Other:** Not applicable.

**Protective Gloves:** Chemical resistant.

**Eye Protection:** Safety glasses, face shield or goggles.

**Other protective clothing or equipment:** Wear long pants, long sleeved shirt or other body covering clothes. Avoid skin or eye contact.

**Work/Hygienic practices:** Wash thoroughly after handling and before eating or smoking. Remove contaminated clothing and wash thoroughly before reuse.

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**Section 9: Physical and Chemical Properties**

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<b>Appearance:</b>	Amber Liquid
<b>Odor:</b>	Aromatic Solvent Odor
<b>Boiling Point:</b>	N/D
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	0.8964
<b>Vapor Pressure (mmHg):</b>	N/D
<b>Melting Point:</b>	N/D
<b>Vapor Density (Air = 1):</b>	N/D
<b>Evaporation Rate (Butyl Acetate = 1):</b>	N/D
<b>Solubility in Water:</b>	Emulsifies.

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**Section 10: Stability and Reactivity**

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<b>Stability:</b>	Stable.
<b>Conditions to avoid for stability:</b>	None.
<b>Incompatibility:</b>	Strong acids and oxidizers.
<b>Hazardous Decomposition or Byproducts:</b>	CO, CO <sub>2</sub>
<b>Hazardous Polymerization:</b>	Will not occur.
<b>Conditions to avoid for Hazardous Polymerization:</b>	None.

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**Section 11: Toxicological Information**

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**Acute Toxicity/Irritation Studies:**

(The following data were developed with Synpren-Fish)

**Ingestion:** Oral LD<sub>50</sub> 147 mg/Kg (Rat – female) (Moderately toxic)

Product: 655-421

Prentox® Synpren-Fish™ Toxicant

**Dermal:** 704 mg/Kg (Rat – male) (Slightly toxic)  
**Inhalation:** 561 mg/Kg (Rat – overall) (Slightly toxic)  
>2020 mg/Kg (Rabbit) (Slightly toxic)  
4-hour LC<sub>50</sub> 0.041 mg/l. (Female Rat) (Highly toxic)  
4-hour LC<sub>50</sub> 0.059 mg/l. (Male Rat) (Highly toxic)  
4-hour LC<sub>50</sub> 0.049 mg/l. (Rat – overall) (Highly toxic)  
**Eye Contact:** Moderately irritating (Rabbit)  
**Skin Contact:** Moderately irritating (Rabbit)  
**Skin Sensitization:** Non-sensitizing (Guinea Pig)  
(The following data were developed with rotenone technical and piperonyl butoxide technical)  
**Mutagenic Potential:** Neither ingredient was mutagenic when tested.  
**Reproductive Hazard Potential:** Neither ingredient had reproductive effects when tested  
**Chronic/Subchronic Toxicity Studies:**

**Cancer Information:** A statistically significant increase in the number of benign liver tumors appeared in mice fed piperonyl butoxide technical at doses which far exceed any anticipated daily human intake. Independent industry toxicology experts who have reviewed the data agree that the findings of the study do not indicate a health risk to human beings.  
Rotenone was not carcinogenic when tested in rats and mice.

**Toxicity of Other Components:**

Petroleum solvent: The supplier reports that inhalation of high vapor concentrations (over 1,000 ppm) may cause nervous system effects such as headaches, dizziness, anesthesia and respiratory tract irritation

Surfactant: Causes severe eye irritation, which could lead to permanent eye damage. Prolonged or repeated skin contact may cause discomfort and local redness. Mist can irritate the respiratory tract, experienced as nasal discomfort and discharge with chest pain and coughing.

**Target Organs:** Eyes, skin, respiratory tract.

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**Section 12: Ecological Information**

**Summary of Effects:** This product is extremely toxic to fish. Fish kills are expected at recommended rates. Consult your State Fish and Game Agency before applying this product to public waters to determine if a permit is needed for such an application. Do not contaminate untreated water when disposing of equipment washwaters.

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**Section 13: Disposal Considerations**

**Disposal:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**Container disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

Product: 655-421      Prentox® Synpren-Fish™ Toxicant

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**Section 14: Transport Information**

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**DOT Classification:** Pesticides, liquid, toxic, flammable, n.o.s. (Rotenone, petroleum naphtha)

**Hazard Class:** 6.1, PG I

**Subsidiary hazard class:** 3

**DOT Identification Number:** UN2903

**DOT Shipping Label:** Poison and/or Toxic

**Note:** for transport purposes (49 CFR Part 173.132), the calculated 1-hour LC50 (Rat, overall) is: 0.196 mg/L

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**Section 15: Regulatory Information**

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**SARA Title III Classification:**

Section 311/312:

Acute health hazard

Fire hazard

Section 313 Chemicals:

Piperonyl Butoxide Technical (2.5%) (CAS # 51-03-6)

Xylene Range Aromatic Solvent (% Conf.) (CAS # 64742-95-6)

(Not to exceed 90%)

Contains the following SARA listed ingredients, by weight (typical):

1,2,4-Trimethyl Benzene (CAS # 95-63-6)	32.0	(TWA) 25 ppm
Mixed Xylenes (CAS # 1330-20-7)	3.0	(TWA) 100 ppm
Cumene (CAS # 98-82-8)	1.5	(TWA) 50 ppm
Ethyl Benzene (CAS # 100-41-4)	0.5	(TWA) 100 ppm

This product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372. Any copies or redistribution of this MSDS must include this notice.

**Proposition 65:** This product does not contain any chemical which is known to the State of California to cause cancer or birth defects or other reproductive harm.

**CERCLA Reportable Quantity (RQ):** None.

**RCRA Classification:** Ignitable.

**TSCA Status:** Registered pesticide, exempt from TSCA regulation. All ingredients are on the TSCA inventory.

**Other:** Rotenone

Illinois toxic substance

Massachusetts Hazardous Substance

New Jersey Special Health Hazardous Substance

Pennsylvania Workplace Hazardous Substance

Product: 655-421      Prentox® Synpren-Fish™ Toxicant

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**Section 16: Other Information**

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NFPA Hazard Ratings:	Health:	3	0	Least
	Flammability:	2	1	Slight
	Reactivity:	0	2	Moderate
			3	High
			4	Severe

Date Prepared: September 18, 2000

Supersedes: August 10, 2000

Reason: Revised section 15.

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The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.



**RESTRICTED USE PESTICIDE  
DUE TO AQUATIC AND ACUTE INHALATION TOXICITY**

For retail sale to, and use only by, Certified applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification



## SYNPREN-FISH TOXICANT

Liquid-Emulsifiable

\*For Control of Fish in Lakes, Ponds, Reservoirs and Streams

**ACTIVE INGREDIENTS:**

Rotenone .....	2.5% w/w
Other Associated Resins .....	5.0%
Piperonyl Butoxide, Technical* .....	2.5%

**INERT INGREDIENTS:\*\***

TOTAL: 100.0%

\*Equivalent to 2.0% [Butylcarbityl] [6-propylpiperonyl] ether and 0.5% related compounds.

\*\*This product contains aromatic petroleum solvents.

PRENTOX® - Registered Trademark of Prentiss Incorporated

**KEEP OUT OF REACH OF CHILDREN**



### DANGER - POISONOUS



See Additional Precautionary Statements Below.

**FIRST AID**

Have product container or label with you when obtaining treatment advice.

<b>If swallowed</b>	<ul style="list-style-type: none"><li>• Call a poison control center, doctor, or the National Pesticide Information Center at 1-800-858-7378 immediately for treatment advice.</li><li>• Have person sip a glass of water if able to swallow.</li><li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li></ul>
<b>If on skin or clothing</b>	<ul style="list-style-type: none"><li>• Take off contaminated clothing.</li><li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li><li>• Call a poison control center, doctor, or the National Pesticide Information Center at 1-800-858-7378 immediately for treatment advice.</li></ul>
<b>If inhaled</b>	<ul style="list-style-type: none"><li>• Move person to fresh air.</li><li>• If person is not breathing, call an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.</li><li>• Call a poison control center, doctor, or the National Pesticide Information Center at 1-800-858-7378 immediately for treatment advice.</li></ul>
<b>If in eyes</b>	<ul style="list-style-type: none"><li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li><li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li><li>• Call a poison control center, doctor, or the National Pesticide Information Center at 1-800-858-7378 immediately for treatment advice.</li></ul>

For information on this pesticide product (including health concerns, medical emergencies, or pesticide incidents), call the National Pesticide Information Center at 1-800-858-7378.

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS  
DANGER**

Fatal if inhaled. May be fatal if swallowed. Harmful if absorbed through skin. Causes substantial but temporary eye injury. Causes skin irritation. Do not breathe spray mist. Do not get in eyes, on skin or on clothing. Wear goggles or safety glasses. When working with undiluted product, wear either a respirator with an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-140), or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE prefilter. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco. Remove contaminated clothing and wash before reuse.

**ENVIRONMENTAL HAZARDS**

This pesticide is extremely toxic to fish. Fish kills are expected at recommended rates. Consult your State Fish and Game Agency before applying this product to public water to determine if a permit is needed for such an application. Do not contaminate untreated water when disposing of equipment washwaters.

**CHEMICAL AND PHYSICAL HAZARDS**

Combustible mixture. Flash point of this formulation is 115° F. DO NOT USE OR STORE NEAR HEAT OR OPEN FLAME.

E.P.A. REG. NO. 655-421  
Manufactured by:

5/01

E.P.A. EST. NO. 655-GA4

## PRENTISS INCORPORATED

Plant: Kaolin Road, Sandersville, GA 31082  
Office: C.B. 2000, Floral Park, NY 11002-2000

**STORAGE AND DISPOSAL**

Do not contaminate water, food or feed by storage or disposal.

**Storage:** Store only in original containers, in a dry place inaccessible to children and pets. Prentox Synpren-Fish Toxicant will not solidify nor show any separation at temperatures down to 40° F and stable for a minimum of one year when stored in sealed drums at 70° F.

**Pesticide Disposal:** Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by a according to label instructions contact your state pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**Container Disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

### General Information

Pretox Synpre-Fish Toxicant is a specially formulated product containing synergized rotenone, to be used in fisheries management for the eradication of fish from lakes, ponds, reservoirs and streams. Since such factors as pH, temperature, depth and turbidity will change effectiveness, use this product only at locations, rates, and times authorized and approved by appropriate state and federal fish and wildlife agencies. Rates must be within the range specified on the label.

Properly dispose of unused product. Do not use dead fish for food or feed.

Do not use water treated with rotenone to irrigate crops or release within 1/2 mile upstream of a potable water or irrigation water intake in a standing body of water such as a lake, pond or reservoir.

**RE-ENTRY STATEMENT:** Do not allow swimming in rotenone-treated water until the application has been completed and all pesticide has been thoroughly mixed into the water according to labeling instructions.

### For Use in Ponds, Lakes and Reservoirs

The actual application rates and concentrations of rotenone needed to control fish will vary widely, depending on the type of use (e.g., selective treatment, normal pond use, etc.) and the factors listed above. The table below is a general guide for the proper rates and concentrations. Pretox Synpre-Fish Toxicant disperses readily in water both laterally and vertically, and will penetrate below the thermocline in thermally stratified bodies of water.

**Computation of Acre-Feet:** An acre-foot is a unit of volume of a body of water having the area of one acre and the depth of one foot. To determine acre feet in a given body of water, make a series of transects across the body of water taking depths with a measured pole or weighted line. Add the soundings and divide by the number made to determine the average depth. Multiply this average depth by the total surface area in order to determine the acre-feet to be treated. If number of surface acres is unknown, contact your local Soil Conservation Service, which can determine this from aerial photographs.

**Amount of Pretox Synpre-Fish Toxicant Needed for Specific Uses:** To determine the approximate number of gallons of Pretox Synpre-Fish Toxicant (2.5% Rotenone) needed, find your "Type of Use" in the first column of the table below, and then divide the corresponding numbers in the third column, "Number of Acre-Feet Covered by One Gallon" into the number of acre-feet in your body of water.

General Guide to the Application Rates and Concentrations of Rotenone Needed to Control Fish in Lakes, Ponds and Reservoirs

Type of Use	Parts Per Million		Number of Acre-Feet Covered by One Gallon
	Synpre-Fish Toxicant	Active Rotenone	
Selective Treatment	0.20 to 0.25	0.005 to 0.017	15 to 12
Normal Pond Use	1.0 to 2.0	0.025 to 0.050	3.0 to 5
Remove bullheads or carp	2.0 to 4.0	0.050 to 0.100	1.5 to 0.75
Remove bullheads or carp in rich organic ponds	4.0 to 8.0	0.100 to 0.200	0.75 to 0.38
Preimpoundment treatment above dam	6.0 to 10.0	0.150 to 0.250	0.50 to 0.30

Adapted from Kinney, Edward. 1965. Rotenone in Fish Pond Management. USDA Washington, D.C. Leaflet FL-576

**Pre-Mix and Method of Application:** Pre-mix with water at a rate of one gallon Pretox Synpre-Fish Toxicant to 10 gallons of water. Uniformly apply over water surface or bubble through underwater lines.

**Detoxification:** Pretox Synpre-Fish Toxicant treated waters detoxify under natural conditions within one week to one month depending upon temperature, alkalinity, etc. Rapid detoxification can be accomplished by adding chlorine or potassium permanganate to the water at the same rate as Pretox Synpre-Fish Toxicant in parts per million, plus enough additional to meet the chlorine demand of the untreated water.

**Removal of Taste and Odor:** Pretox Synpre-Fish Toxicant treated waters do not retain a detectable taste or odor for more than a few days to a maximum of one month. Taste and odor can be removed immediately by treatment with activated charcoal at a rate of 30 ppm for each 1 ppm Pretox Synpre-Fish Toxicant remaining. (Note: As Pretox Synpre-Fish Toxicant detoxifies, less charcoal is required.)

**Restocking After Treatment:** Wait 2 to 4 weeks after treatment. Place a sample of fish to be stocked in wire cages in the coolest part of the treated waters. If the fish are not killed within 24 hours, the water may be restocked.

### Use in Streams Immediately Above Lakes, Ponds, and Reservoirs

The purpose of treating streams immediately above lakes, ponds and reservoirs is to improve the effectiveness of lake, pond and reservoir treatments by preventing target fish from moving into the stream corridors, and not to control fish in streams per se. The term "immediately" means the first available site above the lake, pond or reservoir where treatment is practical, while still creating a sufficient barrier to prevent migration of target fish into the stream corridor.

In order to completely clear a fresh water aquatic habitat of target fish, the entire system above or between fish barriers must be treated. See the use directions for streams and rivers on this label for proper application instructions.

In order to treat a stream immediately above a lake, pond or reservoir, you must: (a) select the concentration of active rotenone, (b) compute the flow rate of the stream, (c) calculate the application rate, (d) select an exposure time, (e) estimate the amount of product needed, (f) follow the method of application. To prevent movement of fish from the pond, lake or reservoir, stream treatment should begin before and continue throughout treatment of pond, lake or reservoir until mixing has occurred.

#### 1. Concentration of Active Rotenone:

Select the concentration of active rotenone based on the type of use from those listed on the table. Example: If you select "normal pond use" you could select a concentration of 0.025 part per million.

#### 2. Computation of Flow Rate for Stream:

Select a cross section of the stream where the banks and bottom are relatively smooth and free of obstacles. Divide the surface width into 3 equal sections and determine the water depth and surface velocity at the center of each section. In slowly moving streams, determine the velocity by dropping a float attached to 5 feet of loose, monofilament fishing line. Measure the time required for the float to move 5 feet. For fast-moving streams, use a longer distance. Take at least three readings at each point. To calculate the flow rate from the information obtained above, use the following formula:

$$F = \frac{W \times D \times L \times C}{T}$$

where F = flow rate (cubic feet/second), W = surface width (feet), D = mean depth (feet), L = mean distance traveled by float (feet), C = constant (0.8 for rough bottoms and 0.9 for smooth bottoms), and T = mean time for float (sec.).

### 3. Calculation of Application Rate:

In order to calculate the application rate (expressed as gallons/second), you convert the rate in the table (expressed as gallons/acre-foot), to gallons per cubic foot and multiply by the flow rate (expressed as cubic feet/second). Depending on the size of the stream and the type of equipment, the rate could be expressed in other units, such as ounces/hour, or cc/minute.

The application rate for the stream is calculated as follows:

$$R = R \times C \times F$$

where R = application rate for stream (gallons/second), R = application rate for pond (gallons/acre-foot), C = 1 acre foot/43560 cubic feet, and F = flow rate of the stream (cubic feet/second).

### 4. Exposure Time:

The exposure time would be the period of time (expressed in hours or minutes) during which Pretox Synpre-Fish Toxicant is applied to the stream in order to prevent target fish from escaping from the pond into the stream corridor.

### 5. Amount of Product:

Calculate the amount of product for a stream by multiplying the application rate for streams by the exposure time.

$$A = R \times H$$

where A = the amount of product for the stream application, R = application rate for stream (gallons/second), and H = the exposure time expressed in seconds, require major deviation from these use directions a Special Local Need 24(c) registration should be obtained from the state.

Before applications of Pretox Synpre-Fish Toxicant can be made to streams and rivers, authorization must be obtained from state or federal Fish & Wildlife agencies. Since local environmental conditions will vary, consult with the state Fish & Wildlife agency to ensure the method and rate of application are appropriate for that site.

Contact the local water department to determine if any water intakes are (within one mile) down flow of the section of stream, river or canal to be treated. If so, coordinate the application with the

### For Use in Streams and Rivers

Only state or federal Fish & Wildlife personnel or professional fisheries biologists under the authorization of state or federal Fish & Wildlife agencies are permitted to make application of Pretox Synpre-Fish Toxicant for control of fish in streams and rivers. Informal consultation with Fish & Wildlife personnel regarding the potential occurrence of endangered species in areas to be treated should take place. Applicators must reference Pretox Incorporated's Pretox Synpre-Fish Toxicant Stream and River Use Monograph before making any application to streams or rivers.

**Warranty Statement:** Our recommendations for the use of this product are based upon tests believed to be reliable. The use of this product being beyond the control of the manufacturer, no guarantee, expressed or implied, is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practice. The buyer must assume all responsibility, including injury or damage, resulting from its misuse as such, or in combination with other materials. **PRETOX SYNPRE-FISH TOXICANT STREAM AND RIVER MONOGRAPH USE IN STREAMS AND RIVERS**

The following use directions are to provide guidance on how to make applications of Pretox Synpre-Fish Toxicant to streams and rivers. The unique nature of every application site could require minor adjustments to the method and rate of application. Should these unique conditions water department to make sure the intakes are closed during treatment and detoxification.

### Application Rates and Concentration of Rotenone

**Slow Moving Rivers:** In slow moving rivers and streams with little or no water exchange use instructions for ponds, lakes and reservoirs.

**Flowing Streams and Rivers:** Apply rotenone as a drip for 4 to 8 hours to the flowing portion of the stream. Multiple application sites are used along the length of the treated stream, spaced approximately 1/2 to 2 miles apart depending on the water flow travel time between sites. Multiple sites are used because rotenone is diluted and detoxified with distance. Application sites are spaced at no more than 2 hours or at no less than 1 hour travel time intervals; this assures that the treated stream remains lethal to fish for a minimum of 1 hours. A non-toxic dye such as Rhodamine-WT or fluorescein can be used to determine travel times. Cages containing live fish placed immediately upstream of the downstream application sites can be used as sentinels to assure that lethal conditions exist between sites. Apply rotenone at each application site at a concentration of 0.5 to 2.0 parts per million of Pretox Synpre-Fish Toxicant. The amount of Pretox Synpre-Fish Toxicant needed at each site is dependent on stream flow (see Computation of Flow Rate for Stream).

### Application of Undiluted Material

Pretox Synpre-Fish Toxicant can drain directly into the center of the stream at a rate of 0.8 to 2.4 cc per minute for each cubic foot per second of stream flow. Flow of undiluted Pretox Synpre-Fish Toxicant into the stream should be checked at least hourly. This is equivalent to from 0.5 to 2.0 ppm Pretox Synpre-Fish Toxicant, or from 0.012 to 0.050 ppm rotenone. Back-water, stagnant and spring areas of streams should be sprayed by hand with a 10% solution of Pretox Synpre-Fish Toxicant in water to assure a complete coverage.

### Calculation of Application Rate:

$$X = F (1.692 B)$$

where X = cc per minute of Pretox Synpre-Fish Toxicant to the stream F = the flow rate (a ft/sec) (see Computation of Flow Rate for Stream section of the label) and B = parts per million desired concentration of Pretox Synpre-Fish Toxicant.

**Total Amount of Product Needed for Treatment:** Streams should be treated for 4 to 10 hours in order to clear the treated section of stream of fish. To determine the total amount of Pretox Synpre-Fish Toxicant required, use the following equation:

$$Y = X(0.0158C)$$

Y = gallons of Pretox Synpre-Fish Toxicant required for the stream treatment, X = cc per minute of Pretox Synpre-Fish Toxicant applied to the stream, C = time in hours of stream treatment.

### Application of Diluted Material

Alternatively, for stream flows up to 25 cubic feet per minute, continuous drip of diluted Pretox Synpre-Fish Toxicant at 80 cc per minute can be used. Flow of diluted Pretox Synpre-Fish Toxicant into the stream should be checked at least hourly. Use a 5 gallon reservoir over a 4 hour period, a 7.5 gallon reservoir over a 6 hour period, or a 10 gallon reservoir over an 8 hour period. The volume of the reservoir can be determined from the equation:

$$R = H \times 1.25$$

where R = the volume of the reservoir in gallons, and H = the duration of the application in hours.

The volume of Prentox Synpren-Fish Toxicant diluted with water in the reservoir is determined from the equation:

$$X = Y(102 F)H$$

where X = the cc of Prentox Synpren-Fish Toxicant diluted to 5 gallons, Y = parts per million desired concentration of Prentox Synpren-Fish Toxicant, F = the flow rate (cubic feet/second), H = the duration of the application (hours).

For flows over 25 cubic feet per minute, additional reservoirs can be used concurrently. Back-water, stagnant and spring areas of streams should be sprayed by hand with a 10% v/v solution of Prentox Synpren-Fish Toxicant in water to assure a complete coverage.

#### Detoxification

To limit effects downstream, detoxification with potassium permanganate can be used at the downstream limit of the treated area. Within 1/2 to 2 miles of the furthest downstream Prentox Synpren-Fish Toxicant application site, the rotenone can be detoxified with a potassium permanganate solution at a resultant stream concentration of 2 to 4 parts per million, depending on rotenone concentration and permanganate demand of the water. A 2.5% (10 pounds potassium permanganate to 50 gallons of water) permanganate solution is dripped in at a continuous rate using the equation:

$$X = Y(70 F)$$

where X = cc of 2.5% permanganate solution per minute, Y = ppm of desired permanganate concentration, and F = cubic feet per second of stream flow.

Flow of permanganate should be checked at least hourly. Live fish in cages placed immediately above the permanganate application site will show signs of stress signaling the need for beginning detoxification. Detoxification can be terminated when replenished fish survive and show no signs of stress for at least four hours.

Detoxification of rotenone by permanganate requires between 15 to 30 minutes contact time (travel time). Cages containing live fish can be placed at these downstream intervals to judge the effectiveness of detoxification. Water temperature of less than 50° F detoxification may be retarded, requiring a longer contact time.

SPECIMEN

## **APPENDIX E**

### **Health and Safety Plan for Rotenone Application**

**U.S. Air Force/U.S. Fish and Wildlife Service**  
**Health and Safety Plan for Rotenone Application**  
**October 2004**

**I. Project Title:**

Eradication of Invasive Fish Species from Pow Wow Park Pond, Malmstrom Air Force Base

**II. Description of Project:**

The subject project is a cooperative effort between the USAF and USFWS to eradicate illegally introduced, invasive fish inhabiting Pow Wow Park Pond with the piscicide rotenone. Use of rotenone is preferred to ensure a complete kill under the conditions found in Pow Wow Park Pond. The USFWS will provide all labor, equipment, and materials necessary to remove the invasive fish species, including goldfish and white suckers. Rotenone will be applied under the direction of Fish and Wildlife Service personnel certified as piscicide applicators by the State of Montana. To accomplish a complete kill, a 2.5% synergized rotenone solution will be applied to the surface of Pow Wow Park Pond and dripped into any inflowing water.

**III. Project Timetable:**

Application of the rotenone will occur in the fall to ensure all fish have spawned, all fish eggs have hatched, and the pond water is at minimum level. It is anticipated that one work day would be required to complete the rotenone treatment.

**IV. Project Organization, Management, and Oversight:**

**Applicator Supervision**

The use of formulated rotenone products will be supervised on-site by at least one person who has Montana Department of Agriculture certification as a piscicide applicator. These supervisors will have the authority to start and stop the rotenone application and will be well versed in all federal and state regulatory requirements regarding the safe and legal use of rotenone and applicator safety. Personnel will include the Montana Fish and Wildlife Management Assistance Office; Fish and Wildlife Biologist, Jane Roybal; Fishery Biologist, Robbin Wagner and Fish and Wildlife Biologist, Rebecca Dittmann. Robbin Wagner will be the on-site supervisor.

**Certified Piscicide Applicators for this project:** Robbin Wagner, FWS  
Rebecca Dittmann, FWS

**USAF Supervision/Site Security:** Rudy Verzuh, USAF, CES/CEV



The edges of the pond will be treated first using a combination of backpack sprayers and plastic watering cans. Those areas of the pond perimeter that can be accessed from the shore will be completed first. Areas of the pond perimeter that cannot be accessed from shore will be treated from the boat using a backpack sprayer. After completion of pond perimeter treatment, the remainder of the rotenone will be applied using a boat equipped with a holding tank and siphon boat bailer. Rotenone solution will be applied from the boat in concentric circles lapping the pond perimeter in a clockwise direction in increasingly smaller circles to the center of the pond until all rotenone is dispersed.

All concentrated rotenone containers will be triple-rinsed and the rinsate applied to the pond. The empty containers will be transported back to Lewistown, crushed, and disposed of in a safe manner. All application equipment will be triple-rinsed and rinsate will be applied to Pow Wow Park Pond. All PPE will be triple rinsed and/or washed. All disposable and unusable PPE will be double-bagged and transported back to Lewistown and disposed of.

### **Area Closure**

The EPA has determined that the use of rotenone for fish control does not present a risk of unreasonable adverse effects to humans and the environment. However, both during and after application, the project area will be closed off to public access. The area treated will be signed and USAF personnel will prohibit public entry for approximately 24 hours after application is complete.

For a 24 hour period beginning at the start of operations at the pond, the area will be marked off by USAF personnel with traffic cones and/or barriers and identified as off limits.

During rotenone application (the time when there is risk of exposure to unprotected personnel) USAF personnel will be on scene to monitor access.

Installation security forces will check the pond on a regular basis with their patrols for a 24 hour period beginning from the time operations start at the pond.

### **Safety Equipment**

The U.S. Fish and Wildlife Service requires that all personnel who handle opened containers of rotenone or participate in the application of rotenone use the following personal protective equipment (PPE): (a) coveralls (disposable Tychem); (b) eye and face protection provided by full-face, air-purifying respirators; (c) rubber boots (hip boots and personal floatation devices will be required for boat operators); and (d) rubber gloves.

Personnel working with (mixing, loading, or applying) undiluted liquid formulations of rotenone will use air-purifying respirators with organic vapor-removing cartridges.

Personnel required to wear respirators must be provided with respiratory protection training that includes instruction on how to properly fit and test a respirator.

**VIII. Signatures:**

**PREPARED BY:**



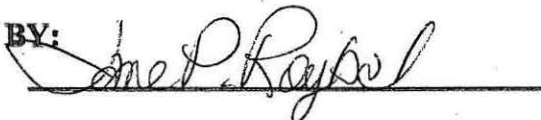
**DATE**

10-6-04

**TITLE:**

Fisheries Biologist

**REVIEWED BY:**



**DATE**

10/16/04

**TITLE**

Branch Chief, Technical Services

**REVIEWED BY:**

\_\_\_\_\_

**DATE**

\_\_\_\_\_

**TITLE**

\_\_\_\_\_

**APPROVED BY:**

\_\_\_\_\_

**DATE**

\_\_\_\_\_

**TITLE**

\_\_\_\_\_



## **APPENDIX F**

### **PUBLIC NOTICES & AGENCY NOTIFICATION LETTERS**

Oct. 29, 2004

WARRIOR 7

**NOTICE OF AVAILABILITY  
DRAFT ENVIRONMENTAL ASSESSMENT  
AND  
DRAFT FINDING OF  
NO SIGNIFICANT IMPACT  
FOR THE ERADICATION  
OF INVASIVE FISH SPECIES FROM POW  
WOW POND AT MALMSTROM AFB**

An Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) to analyze the potential environmental consequences of eradicating illegally introduced goldfish and suckers from Pow Wow Pond, a pond on Malmstrom AFB used for storm water retention and recreation.

The eradication is necessary since the growing population of these illegally introduced fish is having a negative impact on the fishing opportunities at the pond and also poses the risk of these invasive fish being spread to nearby waters. The proposed method for eradicating the invasive fish is the application of the pesticide rotenone in the fall, which would kill all the fish in the pond. The rotenone would be applied by the US Fish and Wildlife Service and would not enter any other waters. The dead fish would then be removed and rainbow trout would be stocked in the spring. Other alternatives considered for eradicating the invasive fish include the use of alternative pesticides, introduction of predator fish, and draining the pond dry.

The EA analyzes potential impacts from proposed action and alternatives on air quality, geology and soils, groundwater, surface water, vegetation, wetlands, fish and wildlife, cultural resources, sensitive noise receptors, environmental justice, health and safety, waste generation, land use, socioeconomic and environmental justice. The EA resulted in a Finding of No Significant Impact (FONSI) to human health and the environment from the proposed action.

The Draft EA and FONSI are available for review at the Malmstrom AFB Library (building 1152) on Fourth Avenue North and at the Great Falls Public Library, 301 2nd Ave. North. Comments on the EA are requested through November 8, 2004. Comments and inquiries should be directed to:

341 CES/CEVC  
39 78th Street North  
Malmstrom AFB, MT 59402-7536  
Fax: (406) 731-6181

Email:  
341ces.environmental@  
malmstrom.af.mil

in Florida that Kerry's commitment to the security of Israel "would be unshakable."

Jr., a former head of the Air National Guard. "Had he been good before? Yeah. Does that

**NOTICE OF AVAILABILITY  
DRAFT ENVIRONMENTAL ASSESSMENT  
AND  
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FOR THE ERADICATION OF INVASIVE FISH SPECIES FROM  
POW WOW POND AT MALMSTROM AFB**

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341 CES/CEVC  
39 78th Street North  
Malmstrom AFB, MT 59402-7536  
Fax: (406) 731-6181  
Email: 341ces.environmental@malmstrom.af.mil

GREAT FALLS TRIBUNE OCT. 27  
2004



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST SPACE WING (AFSPC)

341 CES/CEV  
39 78th Street North  
Malmstrom AFB MT 59402-7536

26 October 2004

Mr. John Wadhams  
Water Protection Bureau  
Montana Department of Environmental Quality  
P. O. Box 200901  
Helena MT 59620-0901

SUBJECT: Submission of Draft Environmental Assessment

Dear Mr. Wadhams:

Enclosed is the draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for the proposed eradication of invasive fish from Pow Wow Pond at Malmstrom AFB. The proposed method for eradicating the invasive fish is the application of the pesticide rotenone by the US Fish and Wildlife Service. The EA analyzed the impacts to the human and natural environment from the proposed action and alternatives, including assessing impacts to air quality, geology and soils, groundwater, surface water, vegetation, wetlands, fish and wildlife, cultural resources, sensitive noise receptors, health and safety, waste generation, land use, socioeconomic and environmental justice.

Please review the attached EA and provide us with your comments. In order to remain on schedule to finalize the EA and implement the proposed action before winter, your comments are requested prior to November 13. Send comments or questions to:

341 CES/CEV  
39 78th Street North  
Malmstrom AFB MT 59402-7536  
Fax: (406) 731-6181  
Email: [341ces.environmental@malmstrom.af.mil](mailto:341ces.environmental@malmstrom.af.mil)

If you need any additional information please contact the undersigned at (406) 731-6167, or Mr. Donald Geertz, Malmstrom AFB NEPA/EIAP Manager, at (406) 731-7227.



RUDY VERZUIN  
Malmstrom AFB Natural Resource Manager

Attachment:

Draft Environmental Assessment and Draft Finding of No Significant Impact for Eradication of Invasive Fish Species from Pow Wow Pond at Malmstrom AFB



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST SPACE WING (AFSPC)

341 CES/CEV  
39 78th Street North  
Malmstrom AFB MT 59402-7536

26 October 2004

Montana Department of Fish Wildlife & Parks  
4600 Giant Springs Road  
Great Falls MT 59401

SUBJECT: Submission of Draft Environmental Assessment

Dear Sir:

Enclosed is the draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for the proposed eradication of invasive fish from Pow Wow Pond at Malmstrom AFB. The proposed method for eradicating the invasive fish is the application of the piscicide rotenone by the US Fish and Wildlife Service. The EA analyzed the impacts to the human and natural environment from the proposed action and alternatives, including assessing impacts to air quality, geology and soils, groundwater, surface water, vegetation, wetlands, fish and wildlife, cultural resources, sensitive noise receptors, health and safety, waste generation, land use, socioeconomic and environmental justice.

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Malmstrom AFB MT 59402-7536  
Fax: (406) 731-6181  
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RUDY VERZUH  
Malmstrom AFB Natural Resource Manager

Attachment:

Draft Environmental Assessment and Draft Finding of No Significant Impact for Eradication of Invasive Fish Species from Pow Wow Pond at Malmstrom AFB (2 Copies)



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST SPACE WING (AFSPC)

341 CES/CEV  
39 78th Street North  
Malmstrom AFB MT 59402-7536

26 October 2004

Montana Department of Natural Resources and Conservation  
PO Box 201601  
Helena, MT 59620-1601

SUBJECT: Submission of Draft Environmental Assessment

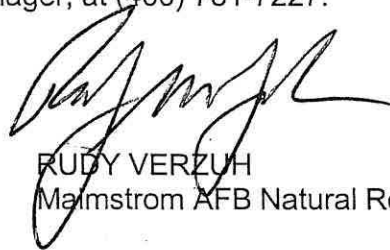
Dear Sir or Madam:

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39 78th Street North  
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RUDY VERZUH  
Malmstrom AFB Natural Resource Manager

Attachment:

Draft Environmental Assessment and Draft Finding of No Significant Impact for Eradication of Invasive Fish Species from Pow Wow Pond at Malmstrom AFB



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST SPACE WING (AFSPC)

341 CES/CEV  
39 78th Street North  
Malmstrom AFB MT 59402-7536

26 October 2004

Cascade County Commissioners  
325 2<sup>nd</sup> Avenue North  
Great Falls, MT 59401

SUBJECT: Submission of Draft Environmental Assessment

Dear Sir or Madam:

Enclosed is the draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for the proposed eradication of invasive fish from Pow Wow Pond at Malmstrom AFB. The proposed method for eradicating the invasive fish is the application of the pesticide rotenone by the US Fish and Wildlife Service. The EA analyzed the impacts to the human and natural environment from the proposed action and alternatives, including assessing impacts to air quality, geology and soils, groundwater, surface water, vegetation, wetlands, fish and wildlife, cultural resources, sensitive noise receptors, health and safety, waste generation, land use, socioeconomic and environmental justice.

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341 CES/CEV  
39 78th Street North  
Malmstrom AFB MT 59402-7536  
Fax: (406) 731-6181  
Email: [341ces.environmental@malmstrom.af.mil](mailto:341ces.environmental@malmstrom.af.mil)

If you need any additional information please contact the undersigned at (406) 731-6167, or Mr. Donald Geertz, Malmstrom AFB NEPA/EIAP Manager, at (406) 731-7227.



RUDY VERZUH  
Malmstrom AFB Natural Resource Manager

Attachment:

Draft Environmental Assessment and Draft Finding of No Significant Impact for Eradication of Invasive Fish Species from Pow Wow Pond at Malmstrom AFB



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST SPACE WING (AFSPC)

341 CES/CEV  
39 78th Street North  
Malmstrom AFB MT 59402-7536

26 October 2004

Water Protection Bureau  
Montana Department of Environmental Quality  
P. O. Box 200901  
Helena MT 59620-0901

SUBJECT: Submission of Draft Environmental Assessment

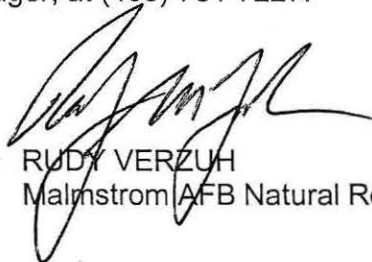
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Please review the attached EA and provide us with your comments. In order to remain on schedule to finalize the EA and implement the proposed action before winter, your comments are requested prior to November 13. Send comments or questions to:

341 CES/CEV  
39 78th Street North  
Malmstrom AFB MT 59402-7536  
Fax: (406) 731-6181  
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If you need any additional information please contact the undersigned at (406) 731-6167, or Mr. Donald Geertz, Malmstrom AFB NEPA/EIAP Manager, at (406) 731-7227.



RUDY VERZUH  
Malmstrom AFB Natural Resource Manager

Attachment:

Draft Environmental Assessment and Draft Finding of No Significant Impact for Eradication of Invasive Fish Species from Pow Wow Pond at Malmstrom AFB



## **APPENDIX G**

### **PUBLIC & AGENCY COMMENTS**



## *Montana Fish, Wildlife & Parks*

4600 Giant Springs Road  
Great Falls, MT 59405

October 29, 2004

Environmental Compliance Office  
341<sup>st</sup> Civil Engineering Squadron  
39 78<sup>th</sup> Street No.  
Malmstrom AFB, MT 59402-7536

Attn: Rudy Verzuh, Natural Resource Manager  
RE: Proposed eradication of invasive fish from Pow Wow Pond

Dear Mr. Verzuh:

Area Fisheries Biologist, Travis Horton, Regional Fisheries Manager, Steve Leathe and I have all reviewed your Draft Environmental Assessment (EA) for the proposal to eradicate goldfish and suckers from Pow Wow Pond using the piscicide rotenone.

We believe your EA did a good job in addressing the significant impacts.

With this letter Montana Fish Wildlife & Parks endorses your plan. We know this issue has been discussed for several years and we hope you can get the job done this fall.

Our Great Falls Hatchery will supply trout when you are ready. Good Luck.

Sincerely,

A handwritten signature in cursive script that reads "Mike Aderhold". The signature is written in dark ink and is positioned above the printed name.

Mike Aderhold  
Region 4 Supervisor



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 341ST SPACE WING (AFSPC)

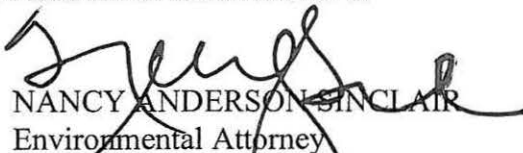
23 November 2004

MEMORANDUM FOR 341 SW/CV

FROM: 341 SW/JA

SUBJECT: Legal Review — Final EA & FONSI for Pow Wow Pond Fish Eradication

1. I have reviewed the final Environmental Assessment (EA) done for the Pow Wow Pond fish eradication project and find it legally sufficient. The EA has found no significant impact from the proposed action; thus, a Finding of No Significant Impact (FONSI) is appropriate.
2. The National Environmental Policy Act (NEPA) at 42 U.S.C. §4321 et seq. requires that any proposed federal action that may impact the environment must be analyzed for the type and extent of impact of the proposed action on the environment. The analysis must employ, "a systematic, interdisciplinary approach to ensure the integrated use of the natural and social sciences, and the environmental design arts in planning and decision making, where federal actions may have an impact on the environment." See NEPA §102. The Air Force has implemented this policy through a multi-tiered process, with the first tier being the completion of an EA. If the EA finds that the proposed action will have no significant impact then the Responsible Individual may sign a FONSI.
3. The draft EA prepared for the Pow Wow Pond fish eradication project employed the interdisciplinary approach and spoke to all functional areas of environmental law providing a comprehensive environmental review. The EA found no significant impacts and public comments were received. The public comments did not require any amendments to the EA; thus, the finding of no significant impacts from the proposed action stands. Since the EA found no significant impact a FONSI is appropriate. I have reviewed the attached FONSI in accordance with 32 C.F.R. §989.15 and find it legally sufficient. Upon completion of the FONSI it must be disseminated for public notice purposes IAW 32 C.F.R. §989.24.
4. The final EA and FONSI are legally sufficient, and should be signed as drafted. After the FONSI has been signed 341 CES should comply with the public notice requirements of 32 C.F.R. §989.24. If you have any questions you may reach me at extension 2878.

  
NANCY ANDERSON SINCLAIR  
Environmental Attorney

I concur.

  
THOMAS J. COUTURE, Lt Col, USAF  
Staff Judge Advocate

## FINDING OF NO SIGNIFICANT IMPACT

### NAME OF THE PROPOSED ACTION

Eradication of Invasive Fish Species from Pow Wow Park Pond, Malmstrom Air Force Base

### DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Proposed Action is to eradicate illegally introduced, invasive fish currently inhabiting the waters of Pow Wow Park Pond through the application of the piscicide rotenone. Use of rotenone is preferred to ensure a complete kill under the conditions found in Pow Wow Park Pond. The action would be a cooperative effort between the USAF and USFWS. The USFWS would provide all labor, equipment, and materials necessary to remove the invasive fish species, including goldfish and suckers. Rotenone would be administered under the direction of individuals certified as piscicide applicators with the State of Montana. Rotenone is toxic to fish, killing them by blocking oxygen uptake. To accomplish a complete kill, 2.5% synergized rotenone solution would be applied to the surface of Pow Wow Park Pond and dripped into any inflowing water. Treatment will take 50 gallons of chemical. Application of the rotenone would occur in the fall to ensure all fish have spawned, all fish eggs have hatched, and the pond water is at minimum level. It is anticipated that one work day would be required to complete the rotenone treatment.

Under the No Action Alternative, the invasive fish species would not be removed from Pow Wow Park Pond. The goldfish population and any white suckers would continue to survive and reproduce in the pond. Other alternatives to the Proposed Action were determined unsuitable and were removed from consideration as they failed to ensure full eradication of the invasive fish species. *Alternative B* (Removal of invasive fish species by draining the pond dry) was dropped from further consideration because of the difficulty with keeping the pond completely dry for a long period, the uncertainty of refill in a timely manner, and the potential adverse effects to associated species of the action. *Alternative C* (Removal of invasive fish species through introduction of a predator species) was dropped from consideration because while channel catfish and tiger muskies would suppress the goldfish population, they would not completely eradicate them. *Alternative E* (Removal of invasive species through use of another chemical fish toxicant [Antimycin]) was dropped from consideration due to its ineffectiveness in waters with high pH such as those in Pow Wow Park Pond.

### SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The Environmental Assessment (EA) provides an analysis of the potential environmental consequences associated with the Proposed Action and No Action Alternative. Resource categories were analyzed to identify potential environmental impacts. Based on this evaluation, the proposed Action would not result in significant impacts in any resource area. The No Action alternative, while resulting in no impact, would not achieve the desired goal of full eradication of the invasive fish species.

Chapter 4 of the EA provides a comparison of the Proposed Action and No Action Alternatives. Under the Proposed Action, air resources would be temporarily impacted by application of rotenone. However, any potential air quality impacts would be short-term and limited to the localized area

around Pow Wow Park Pond. Increased risk to health and safety, mainly to applicators, through inhalation or improper exposure to rotenone will be mitigated by careful management of the toxicant. All applicators and individuals assisting shall wear proper safety equipment including full-face respirators (for applicators) to minimize potential hazards. There would also be a minor increase in noise during application. Biological resources may experience minor adverse impacts in the form of displacement during the rotenone application. Disturbance from human and vehicle presence would be no more than that generated by the routine recreational use at the site.

Surface water in the pond would experience short-term adverse impacts during the rotenone treatment. However, use of rotenone for fish control poses little if any hazard to public health or the environment at the concentrations used. Direct impacts would include removal/eradication of invasive fish species as well as temporary eradication of rainbow trout, crawdads, aquatic insects, and possibly amphibian larvae. Sport fish will be reintroduced once Pond water has detoxified. Aquatic insects and other species should quickly reestablish themselves from nearby sources. Crawdads could be reintroduced after any treatments, if they were eliminated. Amphibian larvae have not been detected in the pond. Turtles, frogs, birds and other mammal species would not be affected by the application of rotenone. Survival of the sport fish and overall health of the pond system will be enhanced by the Proposed Action. Impacts to wetland areas, ground water, significant habitat areas, or threatened or endangered species or their habitat are expected to be minimal to none. Thus, in the long-term the Proposed Action will have a beneficial effect on the ~~on the~~ biological resources and recreational opportunities of the area.

During transportation and application of rotenone, all recommended safety standards would be followed and safety equipment utilized to minimize potential hazards to humans and the environment. Wastes generated from the Proposed Action (soiled chemical suits and gloves, cleanup materials, used spill kits if necessary, dead fish and other affected species, etc) would be managed in accordance with Montana solid and hazardous waste management and Clean Water Act requirements and disposed of in a sanitary and safe manner. Dead fish would be collected, placed in double plastic bags, and stored in sealed canisters for next day pick-up. Surface water would be managed in accordance with the Montana Department of Environmental Quality (DEQ) storm water program. The area will be closed off to public access, signed and monitored by USAF staff for a 24-hour period after the application.

## CONCLUSION

In accordance with the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA), as amended, and the Air Force Environmental Impact Analysis Process regulations contained in 32 Code of Federal Regulations (CFR) 989, an assessment of the environmental effects has been completed for the eradication of illegal, invasive fish currently inhabiting the waters of Pow Wow Park Pond at Malmstrom AFB. I have determined that the Proposed Action will not have a significant adverse impact on the environment or the quality of the human environment. Therefore, an Environmental Impact Statement is not required.



MICHAEL P. HARTMANN, Colonel, USAF  
Chairman Environmental Protection Committee

13 Dec 04

DATE